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Dollars that Fight

By SENATOR HENRY CABOT LODGE

The war will be won by men and ships, by guns and airplanes. To raise armies and supply them, to build the navy and support it, and to furnish ships and transport, we must have money in large amounts. The expenditures of the Government for the ensuing year are estimated at $24,000,000,000, a sum which baffles the imagination to conceive. That vast amount must come one-third from taxes and two-thirds from loans. The success of the Fourth Loan, like those that preceded it is, therefore, absolutely necessary. We must work with the highest speed, as if the war was to end in six months. We must prepare in every direction, as if it was to last for years. Speed and preparation are both expensive.

Without the Loans We Cannot Have Either

We are fighting to secure a just, righteous and lasting peace. For a complete peace we must have a complete victory. It must not be a peace of bargain or negotiation. No peace which satisfies Germany can ever satisfy us. No peace that leaves Germany in a position to renew the war against us will be worth having. It will be far from sufficient to gain all our objects on the Western front—Belgium, Alsace-Lorraine, Italia Irredenta. The President with wisdom and foresight and great force expressed his determination to redeem Russia. Russia must not be left in Germany's hands. That would mean another war. Poland must be free. Slav republics must be established to bar the way between Germany and the East. Serbia and Roumania must be redeemed. All these things are essential. **Nothing will bring them but complete victory and a peace dictated by us and our allies.** It is a conflict of ideas. It is the principle of evil arrayed against the principle of good. It is the battle of freedom and civilization against barbarism and tyranny. **We must win and we shall win.**

We Cannot Win Without Money, and, Therefore, These Loans Are Vital, and the Country Should Rally in All Its Strength and Subscribe and Oversubscribe the Fourth Loan

Buy Bonds to Your Utmost!

This Space Contributed to Winning the War by

MUNICIPAL JOURNAL

Pouring Forth Our Earthly Treasures For Treasures That Are Godly

WEALTH and treasure are material estate. They are the heritage of diligence and good fortune.

But life, liberty and happiness are above all these. They are the possessions of Heaven which God alone bestows, and only He may rightfully take away.

So it is fitting and natural, when a sanguinary power, conceived in cunning and nurtured upon blind submissiveness, challenges the very right of God, that the world should turn in wrath against such blasphemy.

Wealth and treasure are this land's possessions. We are proud to think that this is largely so because the divine principles upon which life, liberty and happiness are predicated have been in diligence and good fortune our earnest precepts.

But as this great estate was in the making, we had no dreams of a day when we might pour forth this wealth and treasure for treasures far more godly.

It is today our privilege to do this, without reserve, unstintingly. And it is our privilege to see this wealth and treasure go forth hallowed by its own great purpose—for it expends itself not for selfish gain nor mean advantage, but that men throughout the world may hereinafter dwell in peace, secure in the knowledge that the life, liberty and happiness given them by God, may not, at the whim of some perverted human agency, be ruthlessly snatched away.

And as you inscribe your name upon a subscription blank for Liberty Bonds to-day, your hand pours forth the treasure of the land, which returning will bring back with it fourfold the treasures of Heaven, life, liberty and happiness, and the gratitude of men saved from servitude and degradation.

Municipal Journal

Volume XLV. NEW YORK, SEPTEMBER 28, 1918 No. 13

ROAD CONSTRUCTION AT AN AVIATION FIELD

Designing, Grading for, and Constructing Concrete Pavements and Curbs at Langley Field—Gutter Grades on Level Streets—Construction Machinery Used—Special Strike-board Designed.

By SAMUEL H. LEA, M. Am. Soc. C. E.*

Among the housing and similar projects now being carried on by the Federal government is the construction of an aeronautic experimental station near Hampton, Va., known as Langley Field, and a town in connection therewith. The town site as laid out contains nearly five miles of streets which will require 69,000 square yards of pavement, 50,350 lineal feet of curb and 40,000 cubic yards of roadway excavation. Aside from its general interest as a war-time project, this work presents many construction features interesting to municipal engineers. The work was done under the direction of the Supply Division of the Signal Corps of the army, the contractor for the work done up to August 10 of this year being the J. G. White Engineering Corporation. William L. Patterson, Signal Corps, U. S. A., was post commander, First Lieutenant J. McInerny, S. R. C., officer in charge of construction. Lieutenant W. N. Scott, S. R. C., was army representative, and H. J. Upson was superintendent of road construction. The work was done under the personal supervision of the writer as road engineer for the contractor.

Langley Field is located on a flat peninsula, the ground of which is almost level and ranges in elevation from six to nine feet above mean low tide. Because of this and the proximity to the coast and the nature of the soil, the ground is wet and spongy and after rains the water stands only about two to four feet below the surface. Roads when excavated were at times so wet as to require considerable pumping; but after being drained, the soil was firm and compact and formed a good foundation for the pavement. The streets were laid out by the architect of the project, Albert Kahn of Detroit, and most of them were given a curved alignment that breaks the monotony of the flat landscape.

In fixing the street grades, the excavation was kept at a minimum but filling under any of the pavements was avoided. It was impossible to obtain continuous grades for the length of even an entire block, and street water inlets were placed at frequent intervals along each curb, the gutters falling to the inlets from summits half way between them with a minimum grade of three inches per hundred feet. As the wavy profile thus given the gutters would be objectionable for roadway crowns, the latter were made continuous and kept at a uniform distance (generally one inch) below curb grade, while the gutters rise and fall relative to such grade.

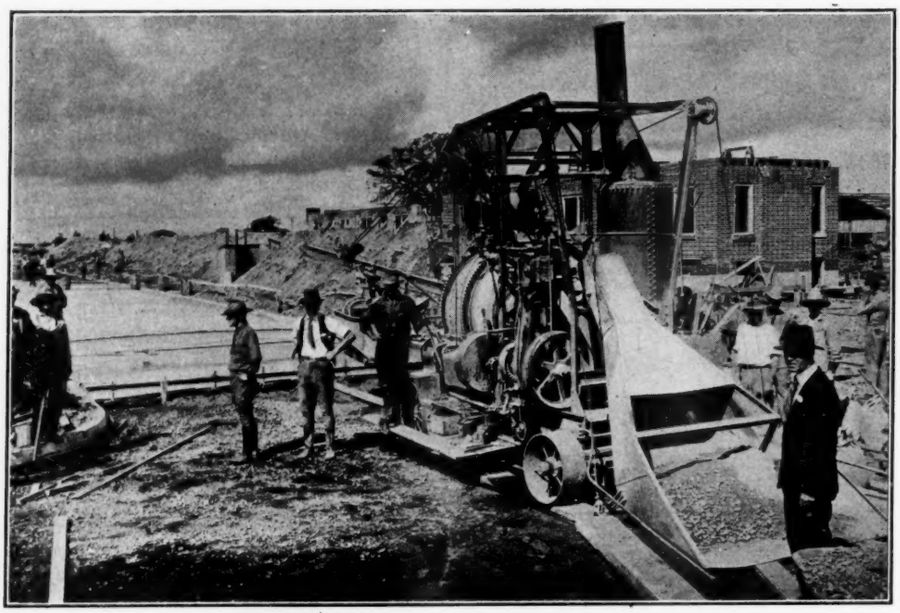
In constructing a given stretch of pavement, the curbs were completed first. These were made of concrete, six inches wide on top with a vertical back and a batter of 1 in 12 on the face, 24 inches deep and resting on a base 24 inches wide extending 8 inches both in front of and back of the curb. As the base extended under the pavement, it was necessary to complete the curb before constructing the pavement, and this was in fact done before the grading of the street. The trenches, 24 inches wide and about the same depth, were excavated with a Parsons trenching machine mounted on caterpillar tractors. At the bottom of the excavation was built the base, four inches thick of 1-3-6 concrete. The curb proper was made of 1-2-3 concrete in five-foot sections. At fifty-foot intervals were placed half-inch expansion joints filled with Elastite joint filler. The outer angles of the curbs were protected with steel curb bars. The concrete for the curb base was mixed with a "Dandy" gasoline

CURB IN PLACE AT STREET INTERSECTION BEFORE GRADING ROADWAY.

* At present field engineer for Hill & Ferguson on the Paradise Creek housing project.

mixer in one-bag batches, while that for the curb proper was mixed by a Marsh-Capron steam mixer of fourteen cubic feet capacity.

Following the completion of the gutters, the roadway was graded by means of steam shovels, two Keystones and one Thew being used, each with a bucket of one-half cubic yard capacity. The material excavated was either deposited back of the curb for grading the land or was loaded into Watson and Studebaker bottom-dump wagons. The shovels were mounted on mats which were moved ahead as the work progressed. During the past winter the ground froze to a depth of several inches, requiring special treatment. The contractor first tried building bonfires for thawing the frost and later used dynamite to break up the frozen earth into sizes that could be handled by steam shovels. The latter method was employed with limited success for several weeks during the most severe weather.



MIXER READY FOR PAVING STREET INTERSECTION.
Completed pavement in background; joint installing device at end; projecting joint filler beyond.

Following this rough grading, fine grading of the roadways was done by hand. The surface was then compacted with a five-ton steam roller and was covered to a depth of three inches with boiler cinders and again rolled. Cinders were believed to form a better sub-base on this soil than would crushed stone or gravel.

The pavement was made of one-course concrete proportioned 1-2-3 and reinforced with No. 25 road mesh placed two inches below the surface. Transverse joints were spaced ordinarily 25 to 35 feet apart and were filled with Elastite joint filler one-fourth inch thick and extending one inch above the surface, protected with steel armor plates cut to the exact crown of the road and set about one-fourth inch below the finished surface. The same filler was used for the longitudinal joints along each curb. At street intersections transverse joints were placed at junction points of curved and straight sections of curb.

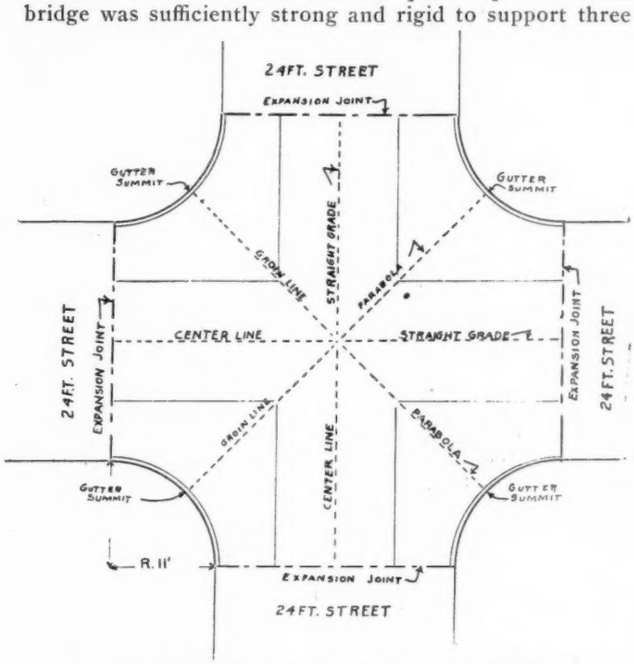
Washed sand and gravel were used for the concrete. These were delivered by rail and loaded by Jeffrey loading machines into bottom-dump wagons which hauled them to the work. Portland cement, also received by rail, was hauled to the work in motor trucks and deposited along the curb. Specifications required the mixing of each batch for at least one minute. Pavement was laid by two gangs, one using a Foote four-bag mixer which discharged through a chute, the other using a No. 16 Koehring mixer provided with boom and bucket. The concrete was spread by shovelers to two inches below finished grade, the reinforcement was placed and the remaining concrete applied. In dry weather the subgrade was sprinkled before placing concrete. The concrete was mixed rather wet, but use of an excessive amount of water was discouraged.

Probably the most novel appliance used on this work was a strike-board used for striking off the concrete pavement. As already described, while the crown of the street continues at a uniform grade or level, the gutter rises and falls. This results in a continuously changing cross-section, and the use of an ordinary strikeboard was therefore impracticable. The one used consists of a board made in two sections of equal length hinged with an iron strap at the center of the roadway. A stiffly framed wooden truss spanned the roadway (two standard widths were constructed, 24 feet and 32 feet between curbs) this truss being rolled along by two wheels at each end that traveled on top of the curb. The center strap hinge was supported from the middle of this truss so that it remained at a fixed elevation relative to the curb. Along each curb were set guide strips with their tops placed exactly at the gutter grade, and on these strips rested the ends of the template or strikeboard. Thus, as the truss carrying the strikeboard was rolled along the curb, the center retained its constant position relative to the curb, while the two ends rose and fell to give the gutter grades. The guide strips in the gutter were made in short lengths and were removed very soon after the strikeboard passed. This contrivance was operated by four men, two pushing it ahead and one at each end of the template worked the ends of this up and down, thus tamping the concrete. After the strikeboard had progressed in this way a few feet it was brought back and again moved forward without raising the ends of the template, leaving behind it a surface ready for the finisher.

Finishing was done from a bridge mounted on small wheels that traveled on the curbs along the two sides of the roadway. It was made of two 1½-inch by 10-inch

FINE-GRADING BEFORE PLACING CINDER SUB-BASE.

planks spanning the roadway, bowed upward with a rise of six inches and the two ends tied together with two half-inch round rods, a strip of 4x6 being inserted between the rods and the planks at the center of the span, and two others about 4x4 at the quarter points. This bridge was sufficiently strong and rigid to support three men. The finisher used first a wooden hand float and followed this with a "darby" or long narrow float, the darby being used to remove the excess water. A roller would probably have been used in place of the darby but for the fact that the presence of the curb made this impracticable.



STREET INTERSECTION, SHOWING SCREED LINES.

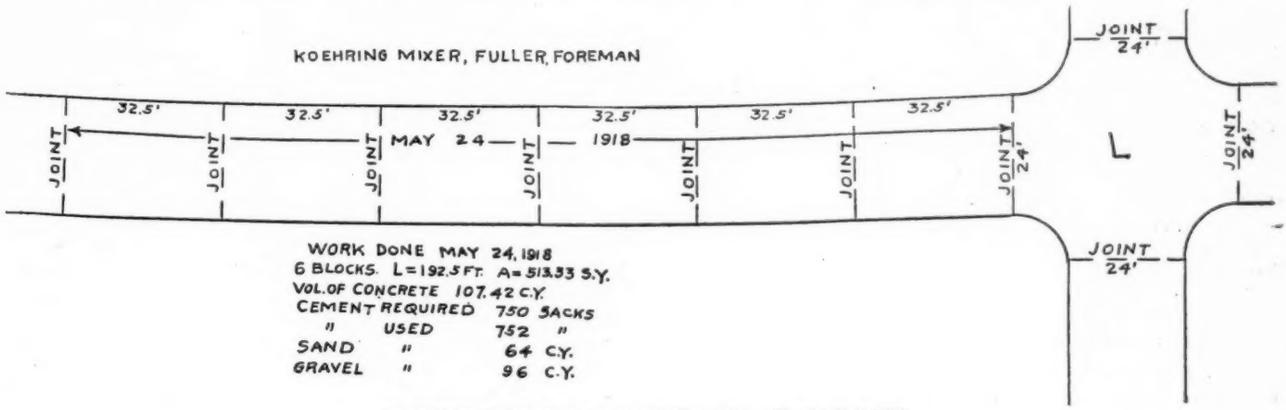
At street intersections stakes were set about 5 ft. apart on center and groin lines (see illustration). The center of the intersection is an inch above normal center line grade. At the corners, where groin lines meet the curb, are high points or gutter summits from which water flows both ways to catch basins. The stakes were connected by grounds or screeding strips, from whose tops the concrete was struck off with short strikeboards. The strips were removed as soon as possible and the spaces filled with fresh concrete. The concrete surface was carefully observed from different positions along the curb to prevent irregularities in the finished surface.

Water for the concrete was at first obtained from a local water company, but the supply proved to be unreliable and during the latter part of the work it was obtained from wells and cellar excavations by gasoline pumps.

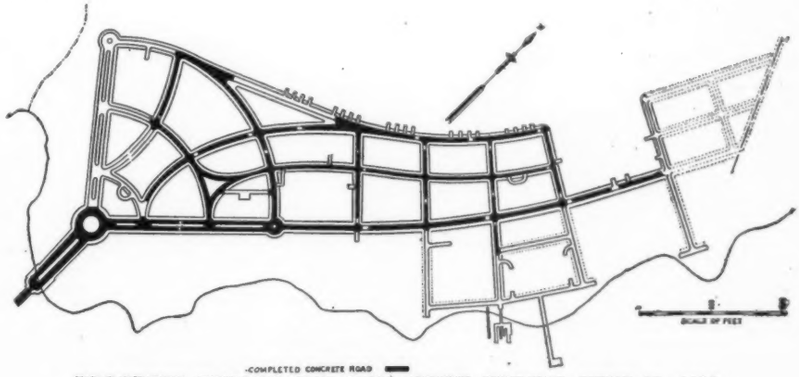
After the completion of the pavement it was protected by a shallow covering of dirt which was kept wet and left in place for two or three weeks.

A record of the work was kept graphically on diagrams of the streets, as shown by the accompanying illustration. These records were taken from record cards, one of which was filled out each day for each gang, on which were recorded the length, thickness, mix, width, square yards, amount of cement, of coarse aggregate and of fine aggregate and the percentage of voids in each, the stations between which concrete was placed, the number of sacks of cement used and the number required by the specifications for the area covered, the composition of the subgrade and preparation which was given it, the method employed for curing the concrete, the name and size of mixer used, the number of revolutions per minute and per batch, and the maximum and minimum air temperature. Each week the completed road was indicated on a weekly report map. The one for June 25 is shown in the accompanying illustration.

The cost of the pavement per square yard was as follows: 1.4 sacks of cement, 58.8c; 2.8 cubic feet of sand, 18.2c; 4.2 cubic feet of gravel, 39.2c; reinforcement, joints, etc., 35.8c; hauling and unloading material, 40c; water for mixing, 5c; labor, overhead and percentage, $1.50; giving a total cost of $3.47 per square yard. These figures are believed not to be excessive considering present conditions and the high quality of the work.



GRAPHIC RECORD OF WORK DONS ON MAY 24TH.



PROGRESS REPORT FOR THE WEEK ENDING JUNE 25, 1918.

WATER WORKS OPERATION

Boiler Room Efficiency—Suggestions for Using Fuel Economically—Firing, Upkeep of Boiler, Steam Piping, Feed Water and Records of Operation—Coal and the Principles of Combustion.

Some suggestions for the operation of steam pumping plants are given below a little out of the order in which it was intended to present these articles on "water works operation," because of the desirability of the immediate and universal adoption of all possible coal conservation methods. Most of the principles and suggestions given may be known and even be familiar to superintendents of water works plants, as they certainly should be to the engineers and firemen; but even so, it will not be amiss to repeat them and remind all superintendents of them, with a view to stimulating renewed efforts toward increasing the efficiency of the use of coal in their plants. The instructions and recommendations are all in conformity with what is generally admitted as good standard practice. Acknowledgment is made to the Engineering Experiment Station of the University of Illinois for use which has been made of their circular No. 7, published a few weeks ago, for suggestions of the manner of presenting much of this information.

Using fuel economically involves care in obtaining coal that can be so used; taking into consideration, in selecting it, both the manner and the plant in which it is to be used. It also involves use of proper methods in firing, in controlling dampers, in applying feed water, as well as maintaining all parts of the boiler plant in the best condition. In order to insure that these ends are secured, it is desirable to keep proper records of the operation of each boiler, from which to learn whether it is being operated economically and in what respect the operation can be improved upon.

A general statement of the essential features will be stated first, to be followed by a more detailed explanation of many of them. These recommendations apply to the use of soft coal only, which is that used in the great majority of plants, although the fundamental principles are applicable to the use of anthracite as well.

Coal.—The care with which coal is prepared and separated into different sizes is an important factor in the efficient operation of the plant.

The B.t.u. value of a coal and the percentage to ash furnish a general guide to its value, and it is desirable to purchase coal on the basis of these two qualities.

The size of grate openings, draft arrangements and other details of each plant determine what kind and size of coal it is adapted to burn most effectively, and these should be borne in mind in selecting the coal used.

Firing.—The three fundamental conditions necessary for complete and smokeless combustion are: (a) a sufficient amount of air must be supplied; (b) the air and fuel must be intimately mixed; (c) the mixture must be brought to the ignition temperature and maintained at this temperature until combustion is complete.

Every boiler should be equipped with two draft gauges, one connected directly in the space over the fire, the other connected both in the space over the fire and in the gas passage below the damper. For each load within ordinary operating range, there should be determined the draft necessary to carry it and the proper thickness of fuel bed with the grade of coal used and the boiler in question.

Automatic draft control has proved economical in many large and some medium-sized plants and offers the additional advantage of maintaining constant steam pressure.

Every plant should have and use continuously some simple type of CO_2 analyzer for obtaining a knowledge of conditions existing within the furnace.

Losses due to the presence of unconsumed coal in the ash should be avoided by seeing that the fire is properly worked and that the grate openings are not too large for the size of fuel fired.

Of the two methods of firing, the coking and the spreading, the latter (applying small quantities at frequent intervals) is believed to be the more economical and generally satisfactory.

Means should be provided for weighing the coal fired to each boiler and the ash removed therefrom.

Upkeep of Boiler.—Air leakage through the boiler setting should be prevented by properly pointing up the brickwork, calking all cracks or joints in the brickwork and between it and the door, etc., and painting or otherwise treating the brickwork so as to render it as air-tight as possible; this air-tightness being maintained by calking and repainting wherever and whenever necessary. Air spaces in the walls of the setting should be filled with ashes or sand.

Exposed parts of the shell of horizontal return-tubular boilers and of the steam drums of water-tube boilers should be covered with a high grade of asbestos insulating material at least two inches thick and the outside finished off with a thin coat of hard cement or covered with canvas and painted.

Sooty deposits on the heating surfaces should be removed frequently. Should the temperature of the gases leaving the boiler exceed 550° Fahrenheit it probably indicates that the tubes need blowing.

Scale should not be allowed to accumulate on the water surfaces of the boiler.

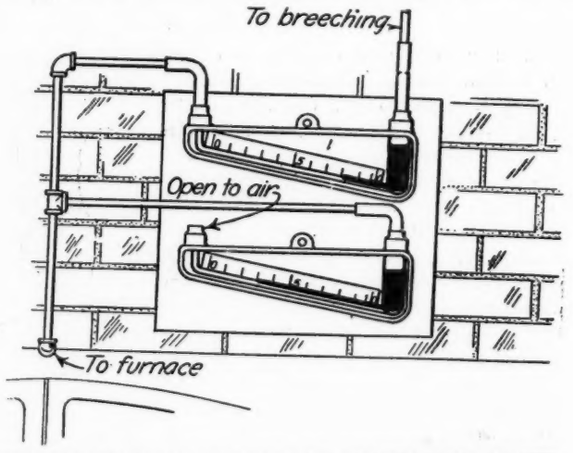
Insulation should be applied to the breeching and stack to prevent heat loss and they should be made air-tight, and the insulation and air-tightness should be tested frequently and maintained.

Leakage losses at valves and fittings in all steam and water lines should be stopped at once.

All steam and hot water piping, fittings, flanges, and valves should be covered with an insulating material.

Feed Water.—If the feed water used causes scale, corrosion or priming, it should be analyzed by a reliable chemist and treated in such manner as he may prescribe.

It is economical to heat the feed water, since one per cent of fuel is saved for every eleven degrees of rise in



SKETCH SHOWING METHOD OF CONNECTING DRAFT GAUGES.

the feed water temperature. For the majority of small boiler plants, feed water should be introduced into the boiler at a constant rate rather than intermittently. Some form of metering device should be used for measuring the water fed to each boiler.

Steam Piping.—In some cases, waste of steam, and therefore of coal, may be prevented by comparatively inexpensive rearrangement or change in the steam piping system. In general, this system should be as simple as possible. Only short, direct runs of live steam pipes should be used in connecting boilers, engines and other steam-using apparatus. In general, the diameter of steam pipes should be the minimum that will deliver the required amount of steam without undue loss of pressure. A steam gauge at the boiler and another at the engine throttle should show a drop in pressure of not more than five pounds when the engine is running at full capacity; but if there is practically no drop at such time, the steam main is probably unnecessarily large.

The exhaust piping should be of such size that a pressure gauge near the engine shows a pressure in the exhaust pipe of not more than two pounds.

Each high-pressure header and steam separator should be provided with a drip and the hot water returned to the feed-water heater.

All pipes carrying live steam should be well insulated; proper insulation will effect sufficient saving in a few months to repay its cost.

Record of Operation.—A suitable record of operation should be kept, from which the superintendent may determine with reasonable reliability the cost of operation, the relative efficiency of the different boilers and of the same boiler from time to time. From this record it should be possible to determine whether individual boilers are operating at their rated capacity. Where there are several boilers, it is generally most economical to require all but one of the boilers to carry its full load or an overload and operate not more than one boiler at less than capacity.

COMPOSITION OF COAL.

Coal contains four general classes of material: (1) solid or fixed carbon, which burns with a glow and without flame; (2) gases or volatile materials which escape from coal when it is heated and which burn with a flame; (3) gases or volatile matter and water which escape from the coal when it is heated and which do not burn; (4) ash or mineral matter which does not burn and which remains as ashes after the coal is burned.

The relative proportions of these materials in different coals determine their value in steam plants. Those having a large amount of fixed carbon and a relatively small amount of volatile matter burn with a short flame and the whole process of combustion takes place at or near the surface of the fuel bed. These are the characteristics of anthracite. Bituminous coals contain a relatively large amount of volatile matter and a lower proportion of fixed carbon, burn with a longer flame and tend to produce more visible smoke because the volume of combustible gases distilled from them is greater. The moisture and non-combustible gases in coal not only do not produce heat, but represent a definite loss because they absorb and carry off heat which would otherwise be available for useful purposes.

Ash is non-combustible mineral matter which not only has no heating value but also may hinder the free burning of the combustible components of the coal, may contain mineral substances that form clinkers and greatly interfere with the process of firing and cleaning the grates, and in being removed through the ash-pit often carries with it a greater or less amount of unburned coal. Ash in coal may either be in the form of rock, slate or shale mixed with the coal or may be a definite part of the composition of the coal itself and inseparable from it.

Eastern bituminous coals contain in general 5 to 10 per cent of ash, 25 to 35 per cent of combustible gases, 2 to 5 per cent of moisture and non-combustible gases and 55 to 65 per cent of solid carbon. Those of the middle west contain 8 to 15 per cent of ash, 10 to 25 per cent of combustible gases, 13 to 30 per cent of moisture and non-combustible gases and 40 to 55 per cent of solid carbon.

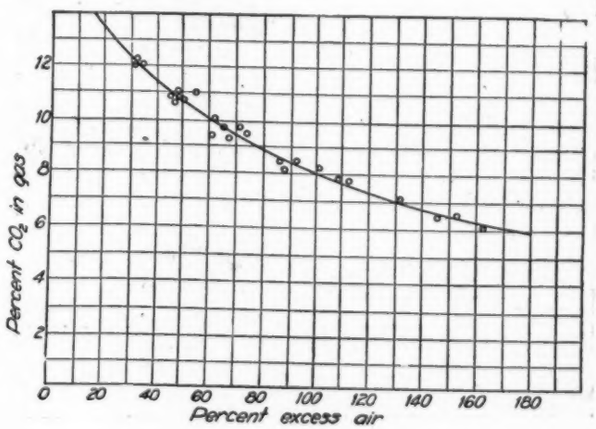
Coal as it comes from the mine should be prepared by removing the rock and dirt, the larger sizes being picked out by hand and the smaller sizes of coal being treated in cleaning machinery. The coal is separated into different sizes by screening.

Given two coals otherwise alike in composition, the ash content increases as the B.t.u. value decreases, and therefore their relative value may be expressed with fair accuracy by either the B.t.u. or the ash value alone; but the evaporative value of any coal drops off more rapidly than its B.t.u. value when the ash content exceeds ten or fifteen per cent. In comparing coals not otherwise alike, both the B.t.u. value and the ash contained are important. While the B.t.u. value shows the chemical composition, the physical properties of the coal may be equally as important in their effects upon the firing, storing and transportation.

PRINCIPLES OF COMBUSTION.

The combustible material in coal consists of carbon, hydrogen and sulphur. When coal is burned these elements unite with oxygen to form carbon dioxide, steam and sulphur dioxide respectively. The oxygen is obtained from the air, twenty-one per cent of which by volume is oxygen and seventy-nine per cent nitrogen. If less than enough air is furnished for complete combusition, part of the carbon forms carbon monoxide instead of dioxide. For every pound of carbon burned to carbon dioxide, 14,600 B.t.u. are given off, while only 4,500 are given off when carbon monoxide is formed. Each pound of hydrogen burned to water vapor gives off 62.100 B.t.u. and each pound of sulphur gives 4,000 B.t.u. The heat so liberated raises the temperature of the fuel, of the surrounding surfaces and of the products of combustion. The water in the boiler is heated partly by direct radiation from the fuel and hot surfaces, but chiefly by heat withdrawn from the gases. All heat carried away by the gases after they have left the heating surfaces of the boiler represents loss and lowered efficiency in the use of the coal.

Complete oxidation of coal requires 11.6 pounds of air for each pound of carbon completely oxidized, 34.8



CURVE SHOWING RELATION BETWEEN EXCESS AIR AND CO_2 IN FLUE GAS.

pounds of air for each pound of hydrogen and 4.35 pounds of air for each pound of sulphur. For ordinary bituminous coal this will average about 12 pounds of air per pound of coal, plus a certain amount of excess air as explained below. If just enough air is used for the complete combustion of the carbon, the oxygen of the air will be replaced by the CO_2 formed and the latter will constitute the same percentage by volume of the mixture as did the original oxygen. If twice as much air is used, the same volume of CO_2 will be formed as before, but will replace only half of the oxygen, and hence its percentage of the mixture will be only half as great. (These relations are somewhat affected by the oxidation of the hydrogen and sulphur, but their amounts are too small to have an important bearing on the result.)

To insure complete combustion, each particle of combustible must come into contact with a sufficient amount of oxygen, and to insure this in practice requires a certain amount of excess air. This excess absorbs some of the heat and represents a loss. The maximum obtainable efficiency is secured when the loss due to heating the excess air just balances that due to the carbon monoxide which is produced if the excess is reduced.

The combustible elements in the coal will not unite with oxygen with sufficient rapidity to produce practical results unless the whole is brought to what is known as ignition temperature. The gases continue to burn after leaving the bed of coals, and if the temperature of these gases is lowered below the ignition point before combustion is complete, combustion will cease and part of the combustible matter in the gases will escape unburned. The maximum efficiency of combustion therefore requires that a sufficient amount of air be supplied, but no more than enough, that this and the fuel be intimately mixed, and that this and the mixture be brought to and maintained at the ignition temperature until combustion is complete.

(To be continued.)

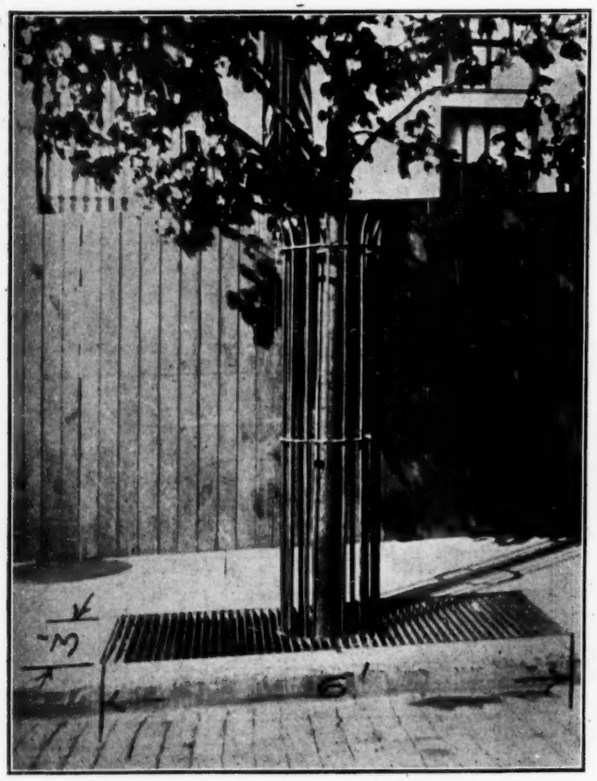


FIG. 1—OBLONG FORM OF GRILL, ADMITTING AIR AND MOISTURE AND PROTECTING GROUND.

GRILLS FOR SHADE TREES

Health of Trees Requires Admission of Air and Moisture to the Soil Around Them—Trampled Ground Prevents This.

BY WERNER BOECKLIN.

In America we are but partly awake to the necessity of safeguarding our street trees. The precautions being taken in many of our far-seeing towns to prolong the life of street trees is comparatively recent in origin.

In Paris the problem has been long considered scientifically and trees are there grown in the nursery and specially prepared for the difficult conditions under which they must live and grow when transplanted to their destined place in the boulevard. The roots are induced by proper pruning to grow chiefly in two directions, so that the tree when placed in position between the impervious asphalt of the drive and the equally water tight walk, can draw its sustenance from the grass plot, or lacking that, from the open space left specially in the walk.

In suburban districts it is a comparatively easy matter to provide ample space for root development with plenty of breathing and drinking area for the root system. In the more thickly populated districts, and particularly in the business sections of our towns, the problem is more difficult and often remains unsolved.

The water and air-tight coverings in most business thoroughfares are not conducive to the health and longevity of the shade tree, since these coverings serve not only to exclude air and water from the feeding roots of the tree but act as a lid to hold all noxious gases within the soil.

The forcible tearing of the tree from its position in the nursery places it at a serious disadvantage and the

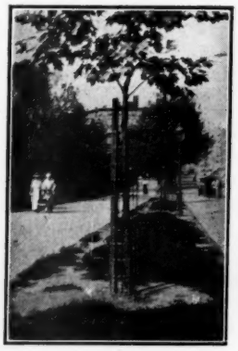


FIG. 2—TREE IN PARKED AREA.

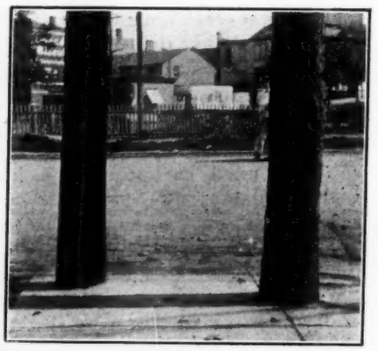


FIG. 5—TREE DOOMED TO DEATH BY STRANGULATION.

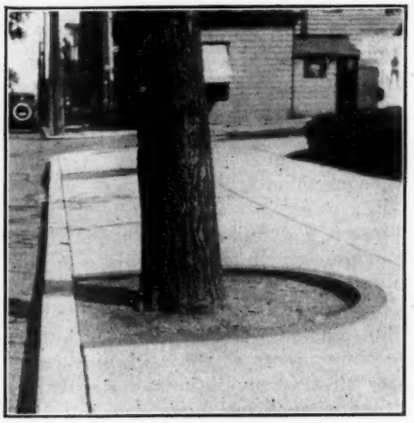


FIG. 3—SOIL PACKED BY PEDESTRIANS. NO AIR OR WATER CAN REACH ROOTS.

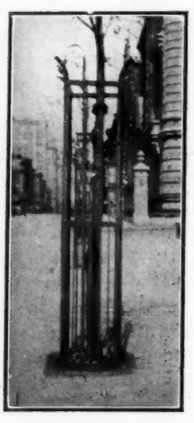


FIG. 4—PRACTICALLY USELESS GRILL.

conditions surrounding it in its new location should be made as nearly perfect as possible.

Varous forms of grills have been devised to protect the root system and to aid it in securing the needed nourishment. We are dealing with a solidly paved area and in the midst of this area space sufficient for the tree must be provided. In an open lawn both air and moisture have easy access to all sides of the tree, but in the sidewalk this is not the case. Here we are usually restricted both on the side next the curb and on the opposite side.

This at once suggests an oblong form of grill. In photograph No. 1 a grill of this type is shown 3 ft. by 6 ft. with a rather ornamental trunk protection. The purpose of the grating is to prevent the soil from being packed so solidly by pedestrians that neither air or water can reach the roots. This is what has happened in the case of the tree in Fig. 3 where the grill has been omitted. The tree was dying when the photograph was taken, and another space may be noticed beyond where a tree once stood and which was killed for lack of water at its roots.

Where space permits, parked areas as shown in Fig. 2 are ideal and trees planted under such conditions should live long, provided atmospheric and soil conditions are not against them.

The grill shown in Fig. 4 with ornamental tree box is practically useless. No tree can live with such a small opening about it. The tree is doomed, but not so soon as that in Fig. 5, where no grill has been used at all and where the walk has been built against the trunk, thus insuring speedy strangulation. In such a case if the tree is worth saving at all, then the owner may as well leave out the walk for a space about the trunk and put what is saved on cost of walk into the purchase of a serviceable grill.

AN AMERICAN ENGINEER IN FRANCE*

Importance of Work Behind the Lines and on This Side of the Atlantic—Economy in Materials and in Labor.

It is certainly going to be some big undertaking to restore devastated France and Belgium. The Germans destroy everything possible. In towns they occupy and are forced to evacuate, the most wanton destruction is practiced. Even buildings and structures that could be of absolutely no value to the Allied armies are destroyed. There is no semblance to civilized warfare. In fact one would think the German armies were made up of men from the heart of uncivilized Africa. And don't ever get the idea that the German people are not warring against us. The deeds that are done by the devils in the ranks are not all forced by Hun officers. It is one and the same! It is the same spirit that was shown by the Huns during the dark ages. Instead of improving in the light of modern civilization, they have become more devilish. I hope they can be wiped off the map. Out west, in our own country, the saying used to be "A good Indian is a dead Indian." This same will apply to these Huns. I certainly hope there will be no "soft hearted" Bryan peace advocates when the end comes. Punishment severe and plenty should be meted out to these people from their Kaiser on down to the lowest. They should be made to pay for all the rebuilding of France and Belgium. If you could only see these towns and roads! It will cost billions of dollars to replace what can be replaced.

We are wonderfully proud of the efforts of our people at home in our behalf and the sacrifices they are making for us. We are well fed, well clothed and well cared for. And the French people are being cared for. I don't believe any other people on earth would do what our people in America are doing.

A lot of people at home seem to get the idea that they are slackers because they are at home. This is wrong! Work at home cannot stop. The men here must be cared for and America must do it. There is just as important work at home as there is over here. I know several engineers who are very much worried because they have not gotten "into the game" as they term it. This is all wrong. Of course, you have many, perhaps, who could have been over here and should be here, but any man who has important, responsible work at home is aiding the cause by keeping up this work. Especially is this true when relinquishment of his work would entail a hardship or tend towards delays or difficulties.

The same conditions, in a small measure, prevail over here. Thousands upon thousands of us are in the service of supplies behind the lines. Some are at base ports; some are in the advanced section and many are in the great intermediate section. And a great many, especially of the younger ones, have been restless because they are not up where the big guns roar. They overlook the fact that we are all essential parts of a big machine and each part **is** essential. The French locomotives have no "cow catchers" and neither has our army. Every service and every department of each service is necessary. Not a strand in the big cable can be broken without weakening just so much the main structure.

And truly, our organization behind the lines is wonderful. There was a great deal of talk and suspicious surmising for a long time. We had so many men here and they were not at the front, not in training. Neither French nor British could understand our methods and why we had so many enterprises and men scattered from ports to the front. But now 'tis different. They now see the most stupendous base port arrangements with ships veritably dumping men and material into the ports. Another look, and from these base ports, by truck and by train, are seen the best conducted lines of communication, entirely across France, that the world has ever witnessed!

The American perfected working plans are the admiration of everybody. There are no more doubting Thomases and no more questions as to why and when. The results are being accomplished and America is being praised and appreciated. Do not think me egotistical, as I am not puffed up. We are proud, though, of what has been done and of what the men at the front are doing. And we are just as proud of our work behind the lines, for our work in caring for the ones at the front is as necessary as the work at the front. And I feel the same way about the work at home. We must be fed, clothed and cared for. Somebody must build boats, make guns and ammunition, and these must be transported. It is this spirit of co-operation and the feeling that everyone has a necessary function, that will win the war. We must all do our part and we cannot all do the same part. At times it seems to me that mine is one of the least necessary. And yet, it is a necessary part and I am glad to be able to do it, and try to do it well. And when the war is over, and we return victorious to the dearest country in the world, it will be with great pride that we can say we have done our best. Few of the men are egotistical, but all are proud, proud of being here, but prouder still that we are Americans!

This war is teaching us some very valuable lessons in many different ways. We over here are learning that there are other people just like our people at home. They have their duties and their cares just as we have. They have their joys and sorrows just as we have our joys and sorrows.

And we are being taught economy in many lines and conservation of resources. For instance, a few days ago I visited the enormous plant being erected for the repair of motor vehicles. Under a canvas cover were two or three first class workmen busy making tables, desks, file cabinets and other what-nots in the line of office furniture. Piled high on the outside of the cabinet shop, under canvas, were all sorts of packing boxes, cases and various and sundry kinds of boards. It was a typical American lumber trash pile or waste dump. Upon inspection, though, it proved to be not a waste dump at all. It was the stock pile, and the neat tables, office desks and imitation "Globe Wernicke" sectional file cabinets were being made entirely from old packing boxes sent from America.

Again, I visited the officer commanding the Motor Transport Repair Shop, a few days since, with the chief of the Salvage Section of the Quartermaster Depot. The motor transport officer arranged to have all the old bolts, scrap iron, broken springs, files, etc., sent to him for use in his shop. He informed us that every pound of steel, iron, copper, or brass he could get hold of was worked into motor transport parts.

All lumber from boxes, crates, etc., is handled in the same way and not a foot of material fit for anything is wasted. Not a piece of wire, scrap of metal, a nail that can

* Concluded from page 229.

be used, not a thing is wasted. For weeks our auto repair shop ran without an ounce of babbitt metal and at the end of several weeks, when this supply came in, the colonel found that he not only had taken care of his repair work (by saving old metal) but actually had several pounds on hand. Why, our general office even saves the backs of envelopes to use for scratch paper, making memo's, etc.

But when it comes to conservation we are all in the primary class with the Frenchman. Especially is this shown in forestry operations. When trees are felled for logging they are cut off very near the ground, not two to three feet above. Then the tree is trimmed of its branches. In American these branches are burned. Not so in France! Every little twig is saved and the smallest ones are done up in bundles to be sold for kindling. Even the chips chopped from the trees in cutting them down are saved. All over our country, in the lumber districts of America, the mills burn their saw dust and pieces useless for lumber. Here, never a piece is lost. Nothing is burned at the mill. The "waste" is bundled up and sold for kindling wood.

In the winter and early spring, when the trees and shrubs are trimmed, all the trimmings are saved and done up in bundles. Throughout the great wine districts, when the grape vines are trimmed, not a twig is lost. It is really wonderful!

We are also learning patience. In fact it becomes to the impetuous American almost a bore, at times, to wait on the seemingly useless "parley-parley" that is always necessary. But if we had less impatience and were not always in such a hurry, how much more we could get out of life! Had it not been for the patient, persevering Frenchman the Kaiser might now be ruling Europe.

Labor is the one point upon which the French have failed to conserve. Personnel has been had at very low prices in every walk in life and both male and female labor has been plentiful. Consequently the methods of handling work of all kinds, from the viewpoint of labor employed, have been extravagant in the extreme. This must change. After the war there will be such an enormous amount of work of every description that labor will necessarily be scarce. Then, too, there will be a shortage of labor for several years because of the army losses sustained by France. France, after the war, will rebuild, but along new lines. Much of the old France will pass away and a modern France will take its place. I do not mean to infer that France is still in the dark ages. Far is it from that! But hand labor and man power in factory and on the farm will be replaced by modern machinery, and laborers will be replaced by workmen operating machines.

STREET CLEANING AND WASTE DISPOSAL IN ST. PAUL.

In the 55½ square miles within the city limits of St. Paul there are 89.6 miles of paved streets and 5.7 miles of paved alleys, 44.9 miles of macadam streets and 0.1 mile of macadam alleys, 13.3 of graveled streets, 382.8 miles of earth roads (graded only) and 20.6 miles of earth alleys. Of the paved streets, about 30 per cent are wood block, 24 per cent asphalt, 13 per cent brick, 12 per cent granite, 9 per cent sandstone, 10 per cent asphaltic concrete, and the remainder are concrete and Tarvia.

During the cleaning season last year 58 miles of streets were cleaned by the patrol system, the area of pavements patrolled being 1,347,051 square yards. The remaining paved streets were cared for by ward crews. The average cost of cleaning by the patrol system was $52.09 per thousand square yards per season, this including the cost of shovelers and of teams hauling away the street sweepings. The area handled by one man varied from 3,200 square yards to 17,600 square yards. The Street Railway Company paid $16,091 for its portion of this service on the street car streets, the total cost of the patrol cleaning being $70,178.

The force consisted of an inspector at $100 a month, an assistant inspector at $90 a month, and a force of sweepers varying from 105 to 125; also 14 teams at 66 2/3 cents per hour and 15 shovelers at 25 cents per hour, working eight hours a day.

In the business district all paved alleys are swept once a week by a part of the ward crew, two teams and four men being assigned to this service. Rubbish receptacles at street corners are emptied by one single team and one or two men, according to the season. In a section of the business district containing 7.12 miles or 144,000 square yards of paved streets, all streets are flushed every night during the season. Three horse-drawn Studebaker flushers are used for this work, the crew consisting of a foreman, three teams and two gutter cleaners, working eight hours. The average cost per night for operating one flusher is $12.07, this including pay-roll, oil, waste, gasoline, water and repairs to equipment. The cost per thousand square yards averaged 24.7 cents. On streets outside the business districts, six flushers operate during the day, working nine hours.

On smooth pavements, such as asphalte and creosote blocks, squeegees are found very successful. The department has five of these machines, the cost of cleaning by which in the business district averaged 15.5 cents per thousand square yards scrubbed once, and 27.7 cents in the outlying districts. The higher cost in the latter districts is due to the necessity of having squeegees followed by pick-up wagons to clean up the gutters, while in the down town district this service is performed by the teams that remove street sweepings.

Paved streets in the residence districts are either flushed or scrubbed at least once a week, and oftener when necessary.

The city makes no regular collection of ashes and rubbish but householders must arrange to have these hauled away by scavengers. Official dumps have been provided at seven points, at which laborers are stationed to level down the material as it is unloaded and prevent it from becoming unsanitary so far as possible, also to prevent the dumping of dead animals, garbage and other materials which would give rise to unsanitary conditions.

Part of the garbage is collected by the city, thirty teams being engaged in this work and three additional teams collecting dead animals. The city furnishes the wagon boxes while teamsters furnish the teams and running gear, for which they are paid $100 a month. The garbage so collected is delivered to hog farms just outside the city limits. There are three such farms, which pay for the garbage received, 75 cents a load being the price by contract after September 1.

In addition to the thirty city teams, there are fifty licensed garbage collectors who pay an annual fee of $5 each and make their own arrangements with hotels, restaurants, and apartment houses for the removal of their garbage. This garbage also is taken to the hog farm. In 1917 there were collected by the city teams 5,414 tons, and 8,760 tons by private collectors. This shows a considerable falling off from the collections in 1916, when the city teams collected 7,215 tons and the private collectors 12,000 tons. This falling off of approximately 26 per cent is attributed to food conservation.

The city received last year $2,172 from hides and dead animals collected. The receipts from garbage collection and license fees amounted to $5,183. These receipts reverted to the general fund and not to that from which the expenses were paid.

In his report for the year, M. N. Goss, commissioner of public works, said: "In the matter of garbage disposal, some method must be adopted which will conserve all of the valuable elements such as grease, fertilizer, etc. We are being educated in food conservation and our ideas in regard to food wastes are rapidly changing. I am fully convinced that the garbage reduction method is the one which should be adapted here."

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SIMON BARR, Assistant Editor
CHARLES CARROLL BROWN, Western Editorial Representative

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HIGHWAY WORK CURTAILMENT

The state highway commissioner of Pennsylvania, J. Denny O'Neil, announced on September 20 that "unless the National Highways Council recedes from its present position, road construction in Pennsylvania will practically cease until after the war. There are sixty-four roads now under construction in Pennsylvania. The Highways Council has disapproved or taken no final action on all except nine. This means that work must stop, as no material of any kind can be secured unless the Highways Council approves the same. The importance of the roads under construction can be guaged from the fact that local authorities are paying one-half the cost.

"The Highway Department is of the opinion that the National Highways Council has failed to realize the importance of road work in Pennsylvania and the great hardship that will be imposed upon the local communities by leaving the roads in an unfinished condition.

"George S. Oliver, of Pittsburgh, Regional Director of District Number Five, War Industries Board, has approved and requested the construction of all roads located in his district, and he has arranged for a hearing in Washington next week, to be attended by himself and Commissioner O'Neil, to try to have the action of the Washington authorities modified, so that the roads now under construction, particularly those which have a large percentage of the material on the ground, will receive their approval."

The entire Pittsburgh district is now devoted almost exclusively to the manufacture of iron and steel into war material—plates for ships, guns, shells, rails, etc., and the main highways leading to and from it are essential for relieving freight congestion of raw materials into and manufactured products from the district. Also the rapid addition of war workers to the population requires the maximum use of all means for bringing in food and other supplies from the surrounding territory. The claim of this territory for permission to improve and maintain its roads would therefore seem to be as great as that of any other section of the country.

In spite of the formation of the Highways Council there still seems to be a failure in Washington to realize the importance of highways. Thousands of men and million of dollars are being used for numerous purposes that are not one-tenth as important as highways. To cite only one illustration, we submit that good roads, even in a farming community, are more important than the tons of candy that are being made weekly and thus add to the sugar shortage.

Pennsylvania is not the only state to suffer from the Washington point of view. A near-by state received the approval of its road program not only by the regional director but also by the National Highways Council, only to be told by the Capital Issues Committee that it must not issue bonds for carrying out the program. The U. S. Fuel Administration has endorsed the idea of using highways for hauling coal by motor truck directly from the mines to nearby points, but this can not be done if the highways are not maintained at their maximum efficiency. It may be that the director of both the railroads and the finances of the country is largely responsible for this restricting of road work. He has stated that the railroads have the freight transportation well in hand and are more than able to haul all the coal that can be mined; but the U. S. Geological Survey gives detailed figures every week showing that shortage of coal cars has cut down the coal output by more than ten per cent and that the total output for the year is far behind the program. It looks as though some convincing missionary work is necessary in this quarter.

There is no question that every one concerned at Washington, the financial and war-business center of the world, is doing what he considers to be for the best interest of the war. If any interest is discriminated against in a way that will interfere with our prosecution of the war, it is because its claims for consideration are not fully appreciated; and it is the patriotic duty of those in charge of such interest to see that these claims are presented to the proper officials as fully and forcibly as possible. If proof is presented, for each road petitioned for, that failure to improve it will interfere with a given war industry or industries, it can hardly be supposed that any official will assume the responsibility of blocking such improvement. But the responsibility should be put up to them squarely and forcibly.

REAL PUBLIC SAFETY.

The annual congress of the National Safety Council, just closed in St. Louis, marks new steps in the development of the growing realization of the meaning of public safety, its needs, its duties, and its benefits. The necessity for the conservation of life and of labor-power in the industries during the war is clear—it was beginning to be appreciated even before the war. But considerations of the safety of the general public have had a larger development, and therefore slower progress, with a tendency to tradition and inertia. There is too much acceptance of the old feeling that the public-safety functions of a city consist only in having a patrolman on the corner and a fire truck in the station.

That a more modern outlook is beginning to imbue the municipalities with a sense of greater possibilities and responsibilities, is indicated by some of the events of the National Safety Congress this year. We find a paper on "City Planning as Related to Public Safety"; a detailed record and analysis of the public safety experimental campaign in Rochester, and a proclamation by five mayors in the vicinity of the convention city of the celebration of a "safety week." A city official acted as chairman of the sectional meetings devoted to public safety. There is more than promise in these features—there is achievement.

City officials and citizens generally, however, will find

vast unrecognized opportunities in the field of public safety. The idea of public safety should be appreciated as being something more than a convenient label to cover the administrative routine of the police and fire departments. Public safety should be distinguished from what is really public first-aid. The essential of safety is in prevention, not in relief. The emphasis is upon forethought and upon intelligent planning. Public safety consists in having no mishaps at all—not in making the best of the results of these mishaps. There is a wide breach between the constitutional phrase "public health and safety," which rolls so glibly off our tongues, and the reality. The death and injury toll of our city streets, the fire tribute, the police records—the gigantic waste of life and property which continues year after year—all are serious indictments of our conception of municipal functions in promoting public safety.

The fundamentals of public safety are chiefly those of planning, administration and education. The city should be so designed and constructed as to minimize the possibilities of danger to the citizens. The activities of the people should be so regulated as to prevent hazards to themselves or each other. And, above all, the people should be so taught that care and sober caution become habits.

Public safety is a necessity as soon as there is a public. It should begin with the city plan, of which it should be an essential element. The city plan touches civic life at every point and at each of these there is a possibility of danger. Zoning, street design, and building regulations involve fundamental principles of public safety. In municipal administration, the element of public safety should be realized in more branches, not merely in the police and fire departments. The consideration of public safety may well be the binding force to coordinate the activities of many municipal departments in which present lack of co-operation frequently results in serious consequences. The basic needs of the citizens should determine the functional organization of administration, and not the arbitrary and time-honored routine and customs. Building inspection, fire prevention, and vice control are examples of recent activities handicapped by blind classification.

In many ways the problem of public education underlies that of public safety. Only in public health have municipalities made much progress in civic campaigning. In the case of safety, "fire prevention day" and "anti-jay-walking" campaigns represent good beginnings. Individual responsibility should be strengthened by public enlightenment.

Broader vision, clearer thinking, intelligent planning and fearless administration are the needs of municipal public safety work. The activities of the city should be extended to afford protection against every kind of avoidable accident or emergency. We have long ago discarded the notion that health is the individual's own private concern; we still retain that attitude with regard to safety. There is no method of wholesale vaccination against accidents—the nearest thing is public education. Death or injury is a social loss—their prevention is a social duty.

CO-OPERATION IN STREET WORK.

The chairman of the committee on streets of the Board of Aldermen of Lansing, Michigan, W. T. Britten, visited Detroit a few weeks ago and on his return reported some features of the work of the street department there which impressed him as worthy of adoption by Lansing. Among these was the McCallum road plane, which he described as being somewhat similar to the King drag, but ten feet long. He suggested that one of these be used to follow up behind the scarifier, thus giving a true surface to the street because of the width covered.

What particularly impressed him, however, was the co-operation between the various departments interested in the streets in Detroit. Heads of the departments of waterworks, sewer, lighting, streets and street cleaning meet every Thursday afternoon at four o'clock and lay out their work for the following week so that a maximum efficiency and a minimum of interference might be secured in the work of all the departments. The superintendent of the street department lays out the work for each crew each day, indicating on a map in the office where each was sent so that he knows at any time where any crew can be found.

KANSAS ROAD MATERIAL SURVEY.

The State Highway Department of Kansas, the State Geologist and the county engineers are conducting a survey of the road materials to be found in that state and also in the nearer sections of adjacent states with a view of facilitating the more extensive use of local materials in road construction and also the determining of the kind of pavement which, in each locality, can best be constructed of the materials locally available. For instance, in some localities where a good tough stone or gravel is available it might be decided to lay a one-course concrete, whereas in other localities where only a poor grade of agregate can be obtained locally, a two-course concrete pavement might be laid in which the local material would be used for the bottom course and imported material for the wearing surface. As we have several times pointed out, transportation conditions resulting from the war make it more desirable than ever and even necessary that much more extensive use be made of local materials, the delivering of which will not require the use of railroad cars.

In making this survey a letter was addressed to the industrial agents of all railroads in the state describing the object of the survey and asking for any information which these agents could give relative to the location of gravel pits, stone quarries or sand deposits along their respective lines of track. Practically all the railroads have sent in a very complete list of shippers of such materials that were reached by their roads. Each of the parties handling these materials whose names were thus obtained was then addressed and asked to give the location of his plant, line by which he shipped, shipping radius, road materials which he could furnish, capacity per day, price of materials at the plant and data as to any tests that had been made of the materials. Answers to these questions were tabulated and the locations of the plants noted on a map. Plants that did not reply within a certain time were called upon personally, and data were finally obtained from practically all of them.

Up to the time this survey was begun, only seven samples of gravel, five samples of sand and twenty samples of crushed stone, representing materials from five companies, had been tested by the state. During and after the survey, samples were secured from each producer and tested by Professor W. B. Wendt, testing engineer for the State Highway Department. Beginning the first of September, an engineer has been regularly employed by the department to devote his entire time to testing road materials, and it is expected that before the construction season opens next year materials will have been tested from every available deposit in the state. When the survey has been completed, the data will be compiled and published in a bulletin of the Kansas Engineering Experiment Station, which will be accompanied by a map of the state showing the location of all materials available for road work.

The WEEK'S NEWS

Spanish Influenza Spreads Rapidly in Camps and Cities—Italian Anti-Tuberculosis Mission—Jersey City's Sewerage Problem—Meter Rates for San Francisco—Bayonne, N. J., Takes Over Water Works—Pasadena's Municipal Lighting Plant—Protecting Railroads from Fire—Big Factory Fire in Newark, N. J.—New York's Policewomen—Federal Taxation of Local Bonds—State Councils of Defense to Control Improvements—U. S. Aids Seattle's Street Cars.

ROADS AND PAVEMENTS

Counties Cannot Bid on State Highway Contracts.

Salem, Ore.—That counties cannot become bidders in the awarding of contracts by the state highway commission for the construction of highways that are to be paid for by funds of the government and the state, is the advice attorney general Brown gives in an opinion written for district attorney John O. Hodgin, of Union county. The opinion shows that bidding on contracts of this character would be beyond the authority of a county court which has only such authority as is delegated to it by the law. It is explained that a county has power to let contracts or to build its own roads.

Issues Committee Approves Lincoln Highway Section.

Canton, O.—The $190,000 bond issue for the completion of the Lincoln Highway in Stark county, has been approved by the Capital Issues Committee at Washington. At the same time it was announced that the committee had refused to approve the bond issue for the completion of the Massillon-Canal Fulton Road. Because of the importance of the Lincoln Highway from a military standpoint, the government has requested that the road be put in shape for traffic as soon as possible, according to the commissioners. Immediate steps will be taken to get the money in fund from the sale of the bonds, it was said. Federal financial aid to the extent of $10,000 per mile will also be available for this work, commissioners stated. Whether or not the county and federal funds will be sufficient to complete the improvement, has not yet been definitely determined, it was announced. The state may be requested to help in the event that the estimate covering the eight miles of the highway exceeds the funds on hand.

Tractors Save Time and Money.

Eugene, Ore.—A saving of $1,400 and work completed in three weeks that would have required two months' time with old methods in use is the record of tractor road construction in Lane county on the Elmira Highway, at a point about ten miles from Eugene, according to county surveyor Hollis W. Libby. Mr. Libby referred to a fill on the Coyote Creek bottoms where 7,000 yards of earth have been graded up from the sides, the caterpillars pulling the scrapers up over the side of the embankment in carrying the earth from the lower ground on the right-of-way. He cited this work as an illustration of the amount of saving that Lane county has effected by the use of tractors in road construction. Lane county purchased a tractor equipment, including tractor, grader, leveler, scarifier and cars for use in hauling crushed rock last summer. The county court was so well satisfied with the first few months of work that a second equipment was purchased this spring. The total investment in road machinery has been about $15,000. Much work is now being done on the roads that could not have been done this season with old methods in use because of the shortage of labor, and much has been done that the county would not have considered within reason at present costs with old equipment. According to the experience of the county, a tractor with a train of four cars hauls 32 yards of rock each trip at a cost of 12 cents per yard per mile. An automobile truck hauls four yards at a cost of 25 to 28 cents, and a team and wagon have a capacity of two yards at a cost of 30 to 35 cents. These figures given out by Mr. Libby are based on costs of actual construction work. "We have not had near as big a crew as we had last year and have built 50 per cent. more road," Mr. Libby stated. "Notwithstanding the higher wages for labor our cost of macadam road per mile is no higher than it was under the old system." The work in the county now under way, when completed will make a total of eight miles of macadam road built during the last year, as compared with five miles in 1917. According to Mr. Libby's estimates both the cost of grading and hauling has been reduced one-half as a result of the use of the tractors.

SEWERAGE AND SANITATION

Spanish Influenza Increasing.

Washington, D. C.—The outbreak of Spanish influenza at five additional army training camps has been announced by surgeon general Gorgas, making a total of nine camps in which the disease has been discovered. The total number of cases reported from all camps up to the time of the report was 9,313, with eleven deaths. The greatest number of cases, 6,583, was reported from Camp Devens, Mass., while Camp Lee, Va., had 1,211, and Camp Upton, N. Y., 602. Camp Devens also reported 43 new cases of pneumonia, which medical officers believe resulted from the influenza epidemic. The camps included in the announcement, with the number of cases at each, were Camp Gordon, Ga., 138; Camp Syracuse, N. Y., 64; Camp Humphreys, Va., 56; Camp Merritt, N. J., 182, and Camp Lewis, Wash., 11. According to surgeon general Gorges, "Camp surgeons report that in practically all cases the disease has appeared in a very mild form, and that it is reasonable to assume that the victims will be able to return to duty within a short time. Every effort is being made to check as far as possible the spread of the disease. In the three camps where it has assumed the proportions of an epidemic, orders have been issued to discontinue public gatherings in assembly halls and in theatres. The appearance of the disease in the camps does not come as a surprise to the Medical Department, as it was reasonably certain that it would be brought to this country through the normal means of travel. The only method of preventing its entrance into this country would have been to stop communication with European countries while the disease was active in Europe. War-time conditions precluded such a course. The hospital facilities in the camps will be taxed to the utmost to provide for the large number of sick. As an emergency measure barrack buildings are being fitted up as wards so that complete isolation of all victims will be secured. Responsible medical officers at all camps and army centers recently received instructions from the surgeon general regarding the precautions that should be taken to prevent the spread of all classes of respiratory diseases. While these suggestions did not specifically call attention to the possibility of epidemics of Spanish influenza, the advice given applies equally well to this disease. It is believed that the adherence to the sanitary procedure outlined in this communication will limit the spread of influenza."

In response to a request from surgeon general Blue of the United States Public Health Service, health authorities in many states sent out statements as to the development

and spread of the epidemic. Two vessels with influenza aboard were quarantined at Newport News, and in all parts of the country steps were taken by health officers to check the spread of the disease.

New York, N. Y.—Scores of new cases of influenza are being reported every day in the greater city, according to health department reports. Health Commissioner Copeland is satisfied the disease is not getting beyond control here and said the death rate from pneumonia is lower in New York than it was a year ago. No deaths have been reported in this city from influenza, except after pneumonia had been contracted. The board of health has adopted the policy of quarantining civilians who contract the disease, for observation as long as possible. Home cases are being isolated and when the disease develops in tenements the patient is compelled to go to a hospital to avoid spreading the malady. According to Dr. Park, of the department's laboratories, 80 per cent. of the cases examined show Pfeiffer's bacilli, in addition to which is a minute organism not yet identified. The department is concentrating on this unidentified organism, which it is believed may be the factor in the contagion of the disease. A campaign of education against the disease has been begun by commissioner Copeland, who called together representatives of the theatres, moving picture industry and railroads and arranged a plan which, if observed strictly, Dr. Copeland says, will prevent the spread of the disease. At the conference, in Dr. Copeland's office, were C. F. Smith, representing A. H. Smith, regional director for the railroads in this district; Dr. E. T. Gibson, of the Brooklyn Rapid Transit Company; Dr. Richard T. Bang, of the Interborough, and a number of theatrical men. It was agreed to placard all theatres, motion picture houses, subway and surface cars and public meeting places with the following: "To prevent the spread of Spanish influenze, sneeze, cough or expectorate, if you must, into your handkerchief. You are in no danger if every one heeds this warning." Dr. Copeland said the theatre and motion picture men had been asked to instruct their ushers to put out of their amusement places any person who sneezes or coughs without using a handkerchief.

Water Causes Typhoid in Internment Camp.

Hot Springs, N. C.—According to a statement by the war department, due to the lack of proper water facilities, typhoid fever broke out at the alien enemy internment camp at Hot Springs, N. C., early in August. Out of the 177 cases 18 have died. All the patients have been removed to Army General Hospital No. 12 at Biltmore, N. C. All remaining prisoners have been removed to the internment camp at Fort Oglethorpe. The Hot Springs camp was turned over to the army on July 1 for the purpose of transferring all prisoners to the prison camp at Fort Oglethorpe. This camp was instituted by the department of labor, and its occupants were mostly seamen removed from interned German ships which were seized at the outbreak of the war. The first report of typhoid at the camp was received in a telegram from the camp surgeon to the surgeon-general's office on August 4. Nine cases and thirty-six suspected cases and one death were reported. Surgeon-General Gorgas sent an inspector to the camp, and a thorough investigation of the sanitary and water facilities was begun August 7. The inspector found that the internment station had been divided into two camps—A and B. There were 1,000 prisoners in Camp A and 1,127 in Camp B. All the cases developed from Camp B. The entire camp received its main water supply from the city of Hot Springs. The source of this supply being mountain springs the quality of the water is good, but owing to the fact that the camp had been overcrowded it had been necessary to augment the water supply by the construction of service wells in Camp B. These service wells were intended to care for the toilets and baths in this part of the camp. The prisoners had been instructed not to make use of this water for anything except bathing purposes and flushing toilets. As a further safeguard a chlorine apparatus was installed to purify the water. The inspector from the medical department found these wells to be shallow, and tests proved that the water was contaminated. His investigations showed that the facilities for caring for the sick were "primitive," and he recommended that all the sick be transferred to the Army General Hospital at Biltmore. Pending the removal of the men to the hospital at Biltmore hospital facilities were borrowed from the General Hospital. Following the recommendation of the inspector the prisoners were inoculated against typhoid fever. The camp surgeon was directed to increase the amount of chlorine added to the water from .3 of a part per million to at least 4 parts per million. The overcrowding of the camp had curtailed the efficiency of the sanitary arrangements originally provided for the health of the prisoners. The old Hot Springs Hotel, with a capacity of 500, was used to house a great many of the prisoners in Camp A. Cantonment barracks accommodated the remainder in this section. In Camp B the barracks were found by the medical inspector to be about 100 per cent. overcrowded. He also found that, owing to the vast amount of clothing and baggage housed in the cantonments, the ventilation in the barracks was very poor. The general rules of sanitation had been followed.

City Officials in Italian Anti-Tuberculosis Mission.

Washington, D. C.—Announcement has been made by the war council of the American Red Cross of the personnel of the medical unit which will sail for Italy within a few weeks to conduct a health campaign in that country, with the stamping out of tuberculosis as its particular objective. The Italian tuberculosis unit of the American Red Cross, as the organization will be known, will be under the supervision of Colonel Robert Perkins, Red Cross commissioner for Italy. Included in the personnel of the unit, which numbers sixty persons, are many of this country's best known tuberculosis specialists, as well as physicians who have been very successful in the lines of work which they will be called upon to perform. The director of the unit is Dr. William Charles White of Pittsburgh. Others are: Dr. John H. Lowman, professor of clinical medicine at Western Reserve University, Cleveland, chief of the medical division; Dr. Louis I. Dublin of New York, statistician of the Metropolitan Life Insurance Company, chief of the division of medical statistics; Dr. Richard A. Bolt of Cleveland, connected with the health department of that city, chief of child welfare division; Dr. E. A. Paterson of Cleveland, chief of division of medical inspection of public schools; Dr. Robert G. Paterson of Columbus, Ohio, head of the tuberculosis branch of the state health department, chief of the division of education and organization; Miss Mary S. Gardner, head of the bureau of public health nursing of the American Red Cross, chief of division of public health nursing. The executive manager of the organization is Lewis D. Bement of Framingham, Mass.

Other Municipalities Oppose Jersey City's Sewer Plans.

Jersey City, N. J.—Alleging that permanent injury would result from the construction of the proposed intercepting or trunk sewer and a sewage disposal plant for Boonton, Dover and other municipalities in the Rockaway watershed suit has been brought in the court of chancery at Trenton by several municipalities and water companies to enjoin the carrying out of the present plan for the purification of Jersey City's water supply. Complainants in the litigation include the cities of Paterson and Passaic and the East Jersey, Passaic, Acquackanonk and Montclair water companies. Jersey City is made the sole defendant. The burden of the charge made by the complainants is that Jersey City, in seeking to protect its own water supply by means of a disposal plant and trunk sewer discharging into the Rockaway below the dam at Boonton and above Little Falls, will, in effect, place upon the complainants the very evils from which it is seeking to escape. As an alternative to the intercepting sewer proposed by Jersey City the complainants suggest that instead of discharging into the Rockaway River the sewer may be continued as far as Paterson and there connected with the Passaic trunk sewer and ultimately discharged into New

York Bay. Such a plan, it is admitted, would relieve the complainants, as well as Jersey City, from the pollution of potable water supplies. The specific relief sought in the bill is that Jersey City be enjoined from diverting the sewage from Boonton, Dover and all other municipalities in the watershed above its reservoir and from discharging this sewage into the Rockaway below the Boonton dam and above Little Falls; from building its proposed intercepting or trunk sewer along the Rockaway and from erecting a sewage disposal plant below the dam, and from emptying the effluent from the disposal plant into the Rockaway River, "and there permitting the same to flow down the Rockaway into the Passaic River at any point below the dam and above Little Falls." Notwithstanding the "pretense" of Jersey City that the effluent will be pure and harmless the complainants allege that the entire plan is designed to benefit Jersey City at the expense of other communities deriving their water supply from the Passaic River. It also is submitted that Jersey City has no present pressing need for a sewage disposal plant and that the Jersey City water supply is adequately protected by a complete chlorination purifying plant installed by the Jersey City Water Supply Company as successor to the Flynn contracts. As an equitable proposition the complainants charge that Jersey City has no right to divert the sewage of the municipalities involved from its natural outlet at the expense of other communities.

WATER SUPPLY

All Consumers on Meter Basis.

San Francisco, Cal.—The state railroad commission has authorized the Spring Valley Water Company to apply meter rates to all its consumers and to charge a graduated scale of rates, as service charges for meters, running from sixty-five cents a month for each ⅝-inch meter to forty dollars a month for 8-inch meters, the rates depending upon the size of the meter. The charge for water delivered was fixed at twenty-four cents a hundred cubic feet up to 3,300 cubic feet, twenty-one cents a hundred up to 33,300 cubic feet and eighteen cents a hundred cubic feet for all above 33,300 cubic feet. Provision was also made for public use of water, fire hydrants and for street work. The decision was based on the request of the water company for the privilege of charging meter rates in place of the flat rates that have been used for several years. The rates fixed by the commission, the decision stipulated, are tentative and are expected to maintain an equality between the amount of revenue that would be produced by the flat rate system and the revenue by meter charges. Should there be an excess revenue from the meter rates the amount is to be impounded and retained subject to the commission's orders. In other words, the commission provided that in applying the meter rates there is no intent to increase the gross revenue of the company, but simply to change basis of collection to measured service. About 90 per cent of the domestic consumption of the Spring Valley has been metered, the commission says, but the meters have been used only to check excess use and as a basis for computing meter rates. "The important purpose to be served by the establishment of measured service is the conservation of water and to put the cost of waste upon those who are wasteful," says the commission in its opinion. "The subnormal water supply for the last two years has pointed out an immediate necessity for conservation, and a third year of shortage would bring the city and the consumers of this company face to face with possible distress. This necessity for conservation is shown in the statistics of the rainfall compared with the normal rainfall for the last five years. In 1912-13 it was 109 per cent, in 1913-14 it was 112 per cent, but in 1916-17 it had dropped to 41 per cent. The normal rainfall is the average per season for the last forty years." The decision continues:

"From evidence introduced by the company at the hearing it is evident if the rainfall for the year 1918-19 is only normal and the present consumption of water continues it is doubtful that there will be a sufficient supply of water for all purposes, and if the rainfall for this coming year is below normal there will in all probability be an actual shortage as compared with present consumption.

"The situation here presented is such as to fully warrant an immediate order establishing meter rates. With the evidence before us in this proceeding and the actual experience now being had in this immediate vicinity of the serious effects upon the community of a water shortage we believe that every reasonable means should be immediately availed of to avoid a condition whereby there will be insufficient water for all the needs of this community.

"The proposal of the company is fair, to wit, that the rates now established shall not result in any increased revenue or profit, and in the event that through inadvertence or as a result of conditions impossible to estimate accurately a greater revenue shall be produced all overplus over present revenue shall be held at the disposition of the commission for the benefit of consumers.

"Notwithstanding that wide publicity and notice were given of this supplementary petition no protest was made at the hearing nor since to the commission against the immediate establishment of meter rates.

"It becomes our duty therefore to consider how most accurately and fairly to spread the burden of the equivalent of the company's income, agreed to be $3,632,252 annually, as of 1917, over the various classes of consumers.

"We have given this matter very extensive and careful consideration, and have arrived at the conclusion that the sound basis for establishing these rates is that there should be first a service charge based on the size of the meter, which service charge is to be paid by all consumers, regardless of the amount of water used.

"This is in distinction to the establishment of a minimum charge, which involves the payment of a fixed sum by each consumer, based on the size of the meter used, and which sum includes a service charge, together with a charge for a given quantity of water, whether used or not. The minimum charge is invariably higher than the service charge, and it involves the payment by each consumer for a fixed amount of water, regardless of whether or not he uses it. There is no answer known to us which can be made to the man who complains that under a minimum rate he is compelled to pay the same amount for 100 cubic feet of water as his neighbor pays for 300 or 400 cubic feet of water, depending on the amount fixed for minimum use.

"On the other hand, the establishment of a service charge is designed to exact from each consumer the cost to the company of standing ready to serve and thereafter to pay for only such water as he may use."

The following are the rates ordered:

"Public use: Fire hydrants—Rentals as provided for by city ordinance in effect; all water used through meters at general use charges; water used for street sprinkling and flushing sewers considered as one amount, although taken from various hydrants; road and street hydrants other than fire hydrants to be charged at rates now in effect.

"General use charges monthly; service charge for each meter in use: ⅝-inch meter, 65 cents; ¾-inch meter, $1; 1-inch meter, $1.50; 1½-inch meter, $2 50; 2-inch meter, $4.50; 3-inch meter, $8; 4-inch meter, $12.50; 6-inch meter, $25; 8-inch meter, $40.

"Flat rates for street work: Where it is not practical to meter water for street construction work the following rates shall apply:

"For water required for concrete, brick, rubble or other masonry construction, 10 cents per cubic yard.

"For water required for each barrel of cement or lime for any other purpose, 10 cents per cubic yard.

"For water required for grading streets, including water used by steam roller, 8 cents per 100 square feet.

"For water required for settling earth fills, grading and back filling trenches, including water required by steam roller, 4 cents per cubic yard of earth.

"For water required for steam or gas engines used on construction work, 40 cents per eight-hour day."

Water Plant Transferred to City.

Bayonne, N. J.—For a stated consideration of $2,017,000 the New York and New Jersey Water Company has transferred its plant to the city of Bayonne, according to a deed filed for record at Jersey City. The sale includes all the lands, buildings, rights of way, pipe lines, contracts and easements extending from North Arlington, through the Hackensack meadows, under the Hackensack River and along the Morris Canal in Jersey City to Avenue B and West Fifty-fifth street, Bayonne, which are used for supplying water to the city of Bayonne. The price paid to the water company was $2,017,000, of which $1,417,000 was paid in cash, the rest of the $600,000 to be paid on February 1, 1920, when the water company has paid to the Guaranty Trust Company the foregoing amount, which is due on an outstanding issue of bonds.

STREET LIGHTING AND POWER

Deny Raise in Gas and Electric Rates.

New York, N. Y.—The Public Service Commission for the First District has denied the application of the Queens Borough Gas and Electric Company for permission to increase its rates, as a war emergency, from $1.15 per thousand cubic feet to $1.40 per thousand cubic feet for gas, and from 12 to 14 cents per killowatt hour for electricity.

The motion was adopted by a divided vote, commissioners Whitney, Hervey and Kracke constituting the majority in favor of denying the application, while chairman Hubbell and commissioner Ordway opposed the motion, the two latter holding that an emergency existed entitling the company to some relief. The prevailing opinion, written by commissioner Kracke, contended that the evidence at the hearing was not conclusive as to an emergency, and discussed the soaring prices of gas oil and their serious effect not only upon consumers of illuminating gas, but upon the gas companies as well. Commissioner Kracke recommended that at an early date the commission name a special committee to take the matter up with the various federal authorities, with the view of protecting the public rights in regard to gas oil conditions. In a supplementary opinion in support of the majority commissioner Travis H. Whitney held that gas rates could not well be acted upon by state commissions until the national Fuel Administration had fixed reasonable prices for gas oil and had finally decided whether it would reduce the standard and quality of gas throughout the country.

Municipal Plant Saves for City.

Pasadena, Cal.—Nearly $1,500,000 has been saved to the residents of Pasadena in the years that the municipal lighting plant has been in operation, according to the annual report of general manager C. W. Koiner, filed with the city commission. The exact amount saved by the municipal plant over the rates paid before the city lighting plant was established, according to manager Koiner's report, is $1,477,071. The city plant made 7.64 per cent on its investment during 1917-1918. The receipts for the year amounted to $255,784.33, while last year the receipts were $248,614.17. During the year $36,186 was expended in new construction and $18,328 was paid off on the bonded indebtedness. At present the municipal plant has 10,340 patrons, an increase of nearly 1,000 over last year.

No Increased Profits During War.

San Francisco, Cal.—Public utilities which before the war did not operate at a profit cannot plead war conditions as an excuse to have their revenues bolstered to a profitable basis now, according to the state railroad commission. The announcement is given in a decision authorizing the California Telephone and Light Company, operating in the Russian River district, to add a surcharge to its electric rates, which will give the company an added revenue of $8,500 a year. The company wanted a 30 per cent increase in rates, but the commission declares this would produce a return materially beyond what the company's experience indicates as attainable and substantially greater than it could earn in normal times. The surcharges, the commission found, would meet increased operating expenses caused by war conditions.

FIRE AND POLICE

Fire Protection of Railroads.

Washington, D. C.—The Railroad Administration announces that an insurance and fire protection section has been established in the division of finance and purchases, and in supervising this section Mr. John Skelton Williams, the director of the division, will be assisted by Mr. Theodore H. Price, actuary to the Railroad Administration. Mr. Charles N. Rambo, formerly superintendent and secretary of the Mutual Fire, Marine and Inland Insurance Company, Philadelphia, has been appointed manager of the insurance and fire protection section, with headquarters in the Premier Building, 718 Eighteenth street, N. W., Washington, D. C. In the work devolving upon it the insurance and fire protection section will have the cooperation of an advisory committee, of which Mr. Theodore H. Price is chairman. The other members of the committee are Mr. R. M. Bissell (president of the Hartford Fire Insurance Company, Hartford, Conn., and also chairman of the National Conservation Committee and the National Board of Fire Underwriters); Mr. Charles E. Mather of Philadelphia, Mr. D. R. McLennan of Chicago and Mr. A. M. Schoen, a civil and electrical fire protection engineer and expert, at present chief engineer of the Southeastern Underwriters' Association of Atlanta, Ga., and also a member of various national and other consulting boards throughout the United States. The insurance and fire protection section will have its own force of general inspectors and loss investigators reporting directly to it at Washington, and through the division of operations will communicate to the regional directors and the officers and employees of the operating force under them with regard to the work of fire prevention and inspection on all railways under control of the United States Railroad Administration with the object of utilizing existing organizations as they may be available, reorganizing them when it may be necessary and establishing adequate fire protection and inspection organizations for those properties upon which no such organization is now maintained. Prompt compliance with the recommendations of the insurance and fire protection section, received through the channels designated, will be required from all officials of the railroads. Director-General William G. McAdoo says: "The heavy fire losses throughout the country and the recent destruction by fire in and on the railroad properties emphasize the need of increased vigilance in applying the latest and most effective methods of fire prevention, and it is especially essential that the officials and employees shall with renewed energy co-operate in the reduction of the hazard and the unnecessary fire waste."

Firemen Strike.

Norwood, O.—The entire fire department, with the exception of the chief and one other man, went out on strike. The men demand one day off in every five. They are now getting one day off in every seven. The home guards of Norwood were called upon immediately and took the places of the firemen. Twelve men were affected.

Eleven Die in Factory Fire.

Newark, N. J.—State, city and county authorities have started investigations into a fatal fire in the factory of the American Button Company in which nine women, a man and a boy lost their lives. Two of the women died at city hospital, one shortly after the fire and the other the following morning. Mayor Gillen called a conference of a group of city officials, at which the factory tragedy was discussed. The officials concluded that the basic cause of the fire was the use of lacquer, a highly inflammable substance, close by machinery. The city law department will go into this question to ascertain whether the city can compel manufacturers to build separate individual buildings for lacquering purposes. A spark from a blower fan motor started the catastrophe. It happened on the second floor, close to the back of the building. Lacquer was being sprayed over a tray of buttons when the spark came, and instantly there was ignition. In another moment the covered buttons were flaming, with more lacquer coming from the spraying machine steadily. That was the beginning, and the small blaze immediately spread in all directions, and it is reported, encountered a two-gallon can of lacquer. At any rate, a few moments after the start the flames suddenly flared up and developed belching clouds of heavy, black smoke. Directly above the scene of the origin was another lacquer room, on the third floor, and toward this the flames started creeping. By the time the factory gong began its insistent warning ring, smoke and flame were already on the top floor, where between twenty-five and thirty-five girls were at work. The fire had easy access to the third floor, for an open stairway ran directly from the one lacquer room to the other. From the instant the fire gong sounded, panic reigned on that top floor, with lamentably few cool heads. The entire force started running about, most of the girls wildly. Some made for the fire escape, others ran to the stairway at the northeast corner of the building—the only other means of direct exit to the first floor and safety—while still others ran about aimlessly, screaming. Some, it is reported, stood stark still in dazed terror, seemingly unable to move or utter a cry.

Few of the girls could tell afterward how they got out. What drove and held the group into the corner known as the "carding room"—the group whose black charred bodies were found by Chief McDermitt after the fire—none could tell, other than to say that it was their panic-stricken condition. The corner was the spot in the room farthest removed from the point of origin of the fire, and it is possible the huddled workers chose it for that reason. But it offered no escape for it was not partitioned off, the entire floor being virtually one entire room. Charles H. Weeks, chief of the Bureau of Construction of the State Department of Labor, came to Newark and began an investigation of the fire and its causes. Mr. Weeks was directed to do this by General Lewis T. Bryant, commissioner of labor. He said: "The American Button factory building was not on record in our offices at Trenton as being an extra hazardous building. It had one interior flight of stairs from the first to the escond floors; two interior flights of stairs from the second to the third floor; an outside, straight-run fire escape, had doors opening onto the fire escape and cut to the floor level. All fire escape egresses and windows opposite, under and upon the fire escapes were of fireproof construction. The interior stairs were semi-inclosed. The building contained a fire alarm system. Fire drills were conducted, and a fire brigade was reported to be organized. Inspectors of the Department of Labor visited this building July 6 and 10, and November 13, 1916; January 2, February 1, March 14 and December 8, in 1917, and while recommendations were made by the inspectors, they were of a miscellaneous character, such as the safeguarding of machinery, repairs to elevators, fire-retarding of the stair inclosures, providing of additional cable for counterbalance of fire escape, metal lined cans and bins for waste. Report on record shows that fire drills were held frequently at the building, and the building quickly emptied." During the fire several girl employees of the button company were asked as to fire drills. All were reticent on this matter, but a few state that they understood that there had been fire drills conducted. None, however, was found who had actually taken part in a drill. A week's campaign in which to raise funds by popular subscription and by benefit performances in behalf of the victims of the fire was decided upon by the city officials called together by mayor Gillen.

Policewomen in New York City.

New York, N. Y.—There are now ten policewomen in the city, four additional ones having been appointed to help the six original ones. They are under Mrs. Ellen O'Grady, fifth deputy police commissioner. They carry all the accoutrements that the policemen carry, such as revolver, handcuffs and summons books. They are also vested with the same authority, and receive $1,200 a year. Commissioner Enright explained that they are exempt from the civil service because the appointments are merely an experiment. If the move proves successful he will ask that provision be made in the 1919 budget for twenty additional women. The city is to be divided into ten zones, in which the appointees will operate. They will receive the cooperation of the various women's organizations in their respective districts. The principal duty of the policewomen is to protect young girls. They will work in both plain clothes and uniform.

Firemen May Do Outside Work in Off Hours.

Scranton, Pa.—Standing on the ground that the city has no right to concern itself with the manner in which employees pass their time when off duty Mayor Connell has declared that he would not interfere with any firemen who seek to earn a few extra dollars at outside work when they have idle time on their hands. So far as he is concerned, he said, he will sanction no order prohibiting the men working at odd jobs during off time. About a year ago there was considerable protest when it became known that firemen while on night platoon duty passed part of the next day at work doing little repairing work, such as carpentry, overhauling automobiles and other work at which they earned a few extra dollars. Council issued an order prohibiting men from engaging in outside work of any description and the cutting off of this little source of additional income was an element later in making the men disgruntled and figured in their repeated demands for more wages. Several firemen broke away from the old rule and have been earning an extra dollar or two. Mayor Connell declares very decisively that it is none of the city's business what any employe does when off duty, so long as he is fit to properly serve the city when actively on duty at his work with the city.

Police and Firemen Get More Pay.

Attleboro, Mass.—Police and firemen of this city are now receiving more pay, as a result of action by the council. The increase is effective as of September 1. The new schedule is $3 a day for the first six months, $3.25 a day for the second six months, $3.50 a day for the second year and after. Permanent captains and electricians of the fire department will receive $4 a day and special police officers are to be compensated at the rate of 33 1-3 cents an hour while on duty.

GOVERNMENT AND FINANCE

House Passes Tax On Local Bonds.

Washington, D. C.—Provisions of the war revenue bill, levying federal income taxes on future issues of state, county and municipal bonds have been approved by the house, a motion for their elimination being defeated, 132 to 61. According to the clauses, surtaxes and war profits or excess profit taxes will be assessed on all incomes derived from such bonds where the amounts of these held exceed $5,000. The law will not apply to bonds already issued or those "authorized by law prior to the passage of this act," or "issued for the indebtedness outstanding at the time of the passage of this act or for the performance of a contract entered into prior to the passage of the act." Officials of a number of cities, including New York and Pittsburgh, have protested to the legislators against the taxes. One of the first attacks at the beginning of the senate discussion centered on the unconstitutionality of the provision.

State Defense Councils Control Improvements.

Washington, D. C.—The War Industries Board has asked the state councils of defense to act as its representatives in passing upon proposed construction, in order that all building which is not absolutely necessary may be stopped. This is part of the new plan of the war industries board, by which permits from the board will be required for construction projects. The procedure will be as follows:

1. The person interested in a construction project will apply, with a full statement of the facts under oath, to the appropriate local representative of the state council of defense.
2. The local representative of the state council will then investigate the necessity of the proposed construction and transmit its recommendation, with a summary of the facts, to the state council for review.
3. The state council, or its appropriate committee, will review the case.
(a) If the state council decides in favor of the construction, it will at once send its recommendations, with a full statement of all the facts, to the non-war construction section of the priorities division of the war industries board. The nonwar construction section will then grant or withhold the permit and notify the state council of defense and also the individual concerned of its action.
(b) If the state council decides against the proposed construction, it will notify the person concerned that his project has been disapproved.
4. The state council will report monthly to the nonwar construction section all applications submitted to it, including those decided adversely.

The War Industries Board will inform all persons applying directly to it that they must first take up their projects with the appropriate local representative of the state council of defense. The ability of the War Industries Board to enforce this whole plan rests upon the fact that it controls priorities and has also secured from the manufacturers of building materials a pledge not to supply materials for projects which are not authorized under the regulations of the War Industries Board. To carry on the work the Coun-

cil of National Defense recommends a small committee on proposed construction in each state council. It urges the selection of men of broad experience, who are known to be disinterested and who are so located that they can assemble frequently. If an existing committee can do this work, it can be assigned to them. The duties of this committee will be:

1. To create and direct the sub-organization throughout your state. As the need of action is immediate, we believe in cases where practicable your county councils or like organization should be utilized.
2. To see that the plan of the war industries board for the curtailment of construction is understood throughout the state and to create a public state of mind which will automatically discourage building.
3. To maintain regular communication with the war industries board on the one hand and with local representatives on the other hand, in order that the policies of the war industries board regarding construction may be uniformly applied locally.
4. To pass upon actual cases of proposed construction.

The War Industries Board will shortly send out further information regarding procedure and will thereafter maintain direct communication with each council. The board will also supply application and report blanks in quantity. The regulations apply to all forms of projected construction except that it does not include undertakings directed by or under contract with the War Department, Navy Department, Emergency Fleet Corporation, Bureau of Industrial Housing and Transportation of the Department of Labor, the United States Housing Corporation and the following civilian enterprises: Repairs of or extensions to existing buildings involving in the aggregate a cost not exceeding $2,500. Roadways, buildings and other structures undertaken by or under contract with the United States Railroad Administration or a railroad operated by such administration. Those directly connected with mines producing coal, metals and ferro-alloy minerals. Public highway improvements and street pavements when expressly approved in writing by the United States Highway Council. These latter have to pass through the state highway commissions for preliminary approval. The ruling applies only to projected buildings and not to those already begun. Where a substantial portion of a building has already been constructed manufacturers and distributors of and dealers in building materials may continue to furnish such materials for the completion of such building, pending further action by the War Industries Board.

TRAFFIC AND TRANSPORTATION

Federal Aid for City Car Lines.

Seattle, Wash.—Under an agreement between A. M. Taylor, director of housing and transportation of the United States Shipping Board, and mayor Ole Hanson, arrangements have been made whereby the city may borrow the sum of $392,000 for municipal railway improvements, of which sum only $330,750 will have to be repaid by the city. Payments are to be made in five annual installments, beginning one year after the close of the war, and bearing interest at the rate of 5 per cent. The agreement provides tentatively that the city extend its elevated line, now in course of construction, from Spokane Street and Whatcom Avenue west of First Avenue, at an estimated cost of $50,000. The Fleet Corporation will loan the city $217,000 for the purchase of thirty-one cars, title of the cars to remain with the shipping board until the loan is repaid, with 5 per cent. interest. A double-track railway is to be furnished the plant of the Seattle North Pacific Shipbuilding Company. If possible, the city will electrify the Northern Pacific siding and connect it with the Lake Burien line. This improvement will cost $75,000. The Fleet Corporation will advance the money. The city will repay 75 per cent. of this amount, and the shipbuilding company will repay the city 40 per cent.

Six Cent Fares for Houston.

Houston, Tex.—The city council has passed a resolution granting the Houston Electric Company a 6-cent fare, an increase of 1 cent. Half fares will be 3 cents, instead of 2 1-2 cents. The new rate becomes effective on Sept. 30 and will remain in operation until the end of the year if there are no further proceedings. At that time the city may order the present rate of 5 cents restored, or it may decide that the company is entitled to a still further increase and declare in favor of a 7-cent rate, which the company has asked for. All capital expenditures must first be approved by city council. Furthermore, the city may demand a detailed statement of the valuation of the property of the Houston Electric Company, which must be furnished either before or after Jan. 1, 1919, the cost to be paid by the company. Until such valuation is made, no dividend is to be declared without giving the city ten days' notice. No dividend can exceed 7 per cent of the present valuation of the property. The city will have a representative on the board of directors of the company, who will be entitled to inspect the company's books. The railway company is to furnish monthly financial statements of its operations regularly to the city.

LEGAL NEWS

A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

City Liability for Injury—Gas Pipe on Street.

(N. Y. Sup.) As regards liability for injury to pedestrian, New York City is not responsible for the placing of gas pipe on street surface by direction of Public Service Commission.—O'Brien v. City of New York, 170 N. Y. S. 592.

Temporary Covering on Sidewalk.

(W. Va.) City may permit a builder to erect a temporary covering over sidewalk to avoid closing it and to protect the pedestrians from injury from falling materials, but must see that such covering is carefully constructed of material of sufficient strength to answer the purpose.—Johnson v. City of Huntington, 95 S. E. 1044.

Ice on Sidewalk—Liability of City.

(Iowa) A city is not liable for injuries due to ice accumulated on sidewalks in the course of nature, but is liable when it permits snow and ice to remain on the walk and be traveled upon until it becomes rough and irregular, if such condition could have been prevented or remedied.—Allen v. City of Ft. Dodge, 167 N. W. 577.

Snow on Sidewalk Covering Hole.

(Mo. App.) Although without recent snowfall hole in sidewalk would have been visible and avoidable, yet, if so covered by snow it became unnoticeable by pedestrian using ordinary care, the city would be liable for injury caused by his stepping through snow into the hole; negligence in permitting the hole concurring with the natural additional cause.—Cross v. City of Sedalia, 203 S. W. 648.

Regulating Reservoir Part of Aqueduct—Taxation.

(N. Y. Sup.) A reservoir used simply to regulate volume of water according to demands of different periods of day constitutes an essential part of aqueduct, which is exempt from taxation by Greater New York Charter, § 480.—People ex rel. City of New York v. Neville, 170 N. Y. S. 583.

Ice on Sidewalk—Water Diverted by City.

(N. Y. Sup.) Accumulation of ice upon sidewalk is not natural and inherent to plan of highway construction, where the city has brought to the street surface water from a park, producing a nuisance dangerous to pedestrians.—McCarthy v. City of Fulton, 170 N. Y. S. 404.

(N. Y. Sup.) The theory that the city was not negligent in permitting the slippery and icy condition of the sidewalk where plaintiff was injured, when it was constantly freezing and thawing at that point, does not apply to waters not naturally there, but diverted there by the city.—McCarthy v. City of Fulton, 170 N. Y. S. 404.

NEWS OF THE SOCIETIES

Oct. 2-4.—AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS. Annual meeting, Buffalo, N. Y. Secretary, Charles Carroll Brown, 304 E. Walnut St., Bloomington, Ill.

Oct. 7-9.—AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS. Annual meeting, Chicago, Ill. Acting secretary, A. D. Williams, Morgantown, W. Va.

Oct. 14-17.—AMERICAN PUBLIC HEALTH ASSOCIATION. Annual meeting, Boston, Mass. Secretary, 126 Massachusetts Ave., Boston, Mass.

Oct. 15-18.—CALIFORNIA CONFERENCE ON CITY PLANNING. Annual conference, Riverside, Cal. Secretary, Charles H. Cheney, Crocker Bldg., San Francisco, Cal.

Oct. 15-19.—LEAGUE OF CALIFORNIA MUNICIPALITIES. Annual convention, Riverside, Cal. Executive secretary, W. J. Locke, Bureau of Municipal Reference, Alameda, Cal.

Oct. 16-17.—LEAGUE OF MINNESOTA MUNICIPALITIES. Annual convention, Rochester, Minn. Secretary, Prof. Richard R. Price, University of Minnesota, Minneapolis.

Oct. 17-19.—KANSAS PUBLIC SERVICE ASSOCIATION. Annual convention, Kansas City, Kan. Secretary, W. W. Austin, Cottonwood Falls, Kan.

Nov. 6-8.—CITY MANAGERS' ASSOCIATION. Fifth annual convention, Roanoke, Va. Secretary, H. G. Otis, city manager, Auburn, Me.

Nov. 14-15.—WASHINGTON STATE GOOD ROADS ASSOCIATION. Annual convention, Pasco, Wash. Secretary, Clancey M. Lewis, Seattle, Wash.

Dec. 3-6.—AMERICAN SOCIETY OF MECHANICAL ENGINEERS. Annual meeting, New York, N. Y. Secretary, 29 West 39th St., New York City.

American Society of Municipal Improvements.

The 24th annual convention of the American Society of Municipal Improvements will be held in Buffalo, N. Y., October 2, 3 and 4, with headquarters at the Iroquois Hotel. If the 1917 convention had not been omitted, this would have been the 25th, or jubilee convention. The first meeting of the organization was held in Buffalo.

During Wednesday, the following sub-committees on standard specifications under the chairmen named, will meet with those interested: Asphalt Paving, F. P. Smith; Bituminous Paving, A. W. Dow; Broken Stone and Gravel Roads, A. H. Blanchard; Brick Paving, E. H. Christ; Concrete Paving, A. W. Dean; Stone Block Paving, H. H. Schmidt; Wood Block Paving, E. R. Dutton; Sewers, W. W. Horner. The special committee on Standard Tests for Bituminous Materials, A. H. Blanchard, chairman, will meet at 4 p. m.

The meeting of the general committee on standard specifications, of which Geo. W. Tillson is chairman, will be held at 4.30 p. m.

On Wednesday evening the session will open with addresses of welcome and response. Norman S. Sprague, chief engineer, bureau of engineering, department of public works, Pittsburgh, Pa., will deliver the president's address. The executive committee, the secretary, the treasurer and the finance committee will report. These will be followed by reports of the special committees on Standard Tests for Bituminous Materials and on Revision of Constitution, of which latter Geo. W. Tillson, Lagrange, Ill., is chairman.

Thursday morning's session will open with the report of the committee on Sewerage and Sanitation, F. A. Dallyn, Toronto, Ont., chairman. The following papers will be presented:

"The Miles Acid Process for the Recovery of Grease from Sewage," by Charles-Edward Amory Winslow, professor of public health, Yale University, and Dr. F. W. Mohlman, chemist, Connecticut state department of health, New Haven, Conn.

"The Pressing of Sewage Sludge." Discussion of Kenneth Allen's paper on this subject in Proceedings for 1917, by E. S. Dorr, sewer service, Boston, Mass.

"The Sewers of Buffalo and Its Neighbors," by Carl L. Howell, assistant engineer, Buffalo, N. Y.

A paper on a sewerage subject by Morris Knowles, Pittsburgh, Pa.

"The Private Sewerage Question," by D. H. Wyatt, M. E., Columbus, O.

The afternoon session will begin with the report of the committee on Street Paving, W. A. Howell, Newark, N. J., chairman. The papers presented will be:

"Who Shall Pay for Paving," by Ellis R. Dutton, assistant city engineer, Minneapolis, Minn.

"Pavement Base in Buffalo," by George F. Fisk, assistant engineer, Buffalo, N. Y.

"Maintenance of Old Asphalt Pavements," by C. E. P. Babcock, first assistant engineer, and J. A. Vandewater, assistant engineer, Buffalo, N. Y.

"Standardizing of Required Consistency of Asphalt," by J. R. Draney, New York City.

"A Paper on Longitudinal Cracks in Brick Pavements," by Wm. C. Perkins, chief engineer, Conneaut, O.

"Napped Trap Block Pavements," by Thomas E. Collins, city engineer, Elizabeth, N. J.

The committee on Sidewalks and Street Design, S. Sammelman, St. Louis, Mo., will report.

The evening session will open with action on the report of the committee on constitutional revision, followed by reports of committees dealing with nominations, meeting place in 1919, etc. The committee on Standard Specifications and its sub-committees will report, followed by the committees on Street Lighting, W. Thomas Wooley, Schenectady, N. Y., chairman, and on Municipal Legislation and Finance, Gaylord C. Cummin, Grand Rapids, acting chairman. Lee W. Eighmy, assistant engineer, Buffalo, N. Y., will read a paper on "Regulation of Street Occupation Under Franchises."

Friday morning will be the "jubilee session." This will probably include an address by George H. Benzenberg,

(Continued on page 259)

PROBLEMS CITIES ARE STUDYING WITH EXPERTS

A SEWERAGE SYSTEM is to be built by Parnassus, Pa., plans being completed by the consulting engineers, Chester & Fleming.

Griffin, Ga., is to make STREET IMPROVEMENTS. Plans and specifications were the work of the Solomon-Norcross Co.

WATER MAINS are to be laid by Columbia Heights, Minn., according to plans prepared by the consulting engineering firm of John W. Shaffer & Co.

A SEWER SYSTEM and SEWAGE DISPOSAL PLANT are to be built by Garner, Ia., plans for which have been completed by the consulting engineer, J. G. Thorne.

A 240-foot reinforced concrete BRIDGE to cost about $50,000 is to be built by Fairport, O. Plans and specifications for the structure were prepared by the Osborn Engineering Co.

WATERWORKS IMPROVEMENTS to cost about $25,000 are to be made by Garber, Okla. Bonds have been voted and plans are in preparation by the consulting engineering firm of Black & Veatch.

Harrison County, Bethany, Mo., is to build ROADS at a cost of $140,000. The engineer for the improvement is M. G. Brown.

In constructing new SEWERS, Berkeley, O., has the consulting engineering services of the Jennings-Lawrence Co.

WATERWORKS IMPROVEMENTS are to be made by Amity, Ore., plans and specifications having been completed by the engineer, R. W. Jones.

Hampton County, the city of Springfield and the town of West Springfield are jointly to repair a BRIDGE. Preliminary plans have been drawn by the engineer, J. P. Snow.

The city of Bethlehem, Pa., is to purchase the property of the local WATER Company. The city retained the accounting firm of Lybrand, Ross Brothers and Montgomery to make a VALUATION.

Pemiscot County, Caruthersville, Mo., is making extensive DRAINAGE IMPROVEMENTS. Plans for the project were prepared by the consulting engineers, Elliott & Harman Engineering Co.

NEW APPLIANCES

Describing New Machinery, Apparatus, Materials and Methods and Recent Interesting Installations.

EXPANSION COUPLING.

New Coupling Designed for Flexibility.

To meet the demand for an efficient expansion coupling E. H. Ford, of the Ford Meter Box Company, Wabash, Ind., has designed a fitting which should prove of general interest to waterworks and power plant men and others concerned with pipe construction and maintenance.

This coupling, while designed primarily for the purpose of connecting water meters into straight line pipes, may be used in any place where flexibility is required in water, gas or steam piping. It is made in three sizes for ⅝-¾ and 1-inch meters and may be used in connections with ½-¾ and 1 inch pipe. No special tools are required for its installation.

This coupling is shown clearly in sectional view in which the simplicity of the device is demonstrated. It is composed of only three parts and the three sizes mentioned provide expansion range of ⅝-⅞ and 1 inch respectively. Sample couplings have been subjected to test pressure of 300 pounds without showing leak. The other illustrations show external views of coupling both expanded and contracted.

AGA HIGHWAY SIGNAL.

Installed at Dangerous Curve.

Sheridan Road in Hubbard's Woods, Winnetka, Ill., is a very attractive drive which draws automobilists riding north from Chicago along the Lake and through the North Shore villages. This road, however, is hazardous because of a number of steep grades and bad curves at points where the highway winds through little ravines and skirts small wooded hills.

In order to protect automobilists from accidents at these dangerous points, the village officials have installed one of the AGA acetylene lighted highway danger signals. This warning operates continuously, giving a flashing red light which may easily be seen at a distance of two or three hundred feet in the day time and further at night. The light is clear, distinctive and compelling. The words: "Slow—Danger" are easily seen both during the day and the night for a distance of two hundred feet. At night the white flame, which flashes through the red lens, serves to illuminate the lettering.

It is expected that the village officials will soon install several more of these signals so that all the dangerous points in Hubbard's Woods will be adequately safeguarded. The accompanying illustration shows the installation. The signal is made by the AGA Railway Light & Signal Co., Elizabeth, N. J.

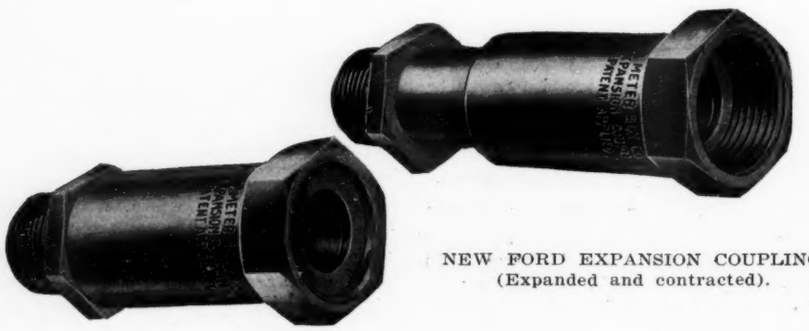
INDUSTRIAL NEWS

Cast Iron Pipe.

While the pig iron supply for pipe manufacturers is not adequate, there is promise of improvement with government co-operation. Plants are, however, maintaining reasonably high production, especially of pipe used in the government's housing and cantonment developments for which pig iron is assured by the War Industries Board. Higher price announcements are expected soon. Quotations: Chicago: 4-inch, $64.80; 6-inch and larger, $61.80; Class A, $1 extra. New York: 4-inch, $64.75; 6-inch and larger, $61.75; Class A, $1 extra.

Revised List of Preferred Industries.

The War Industries Board, under the direction of Bernard M. Baruch, chairman, working through the Priorities Board, headed by Judge E. B. Parker, has formulated a new list of preferred industries.



NEW FORD EXPANSION COUPLING
(Expanded and contracted).

The list is to provide for the widely expanded war needs and at the same time to allow for the pressing demands of civilian origin.

The preference list is a key to the relative importance of all of the country's manifold industrial enterprises. The values are established by surveys as to national needs, and, once established, the list is maintained by a system of priority in determining the use of the six basic elements of industry, which are.

1. Material.
2. Facilities.
3. Fuel.
4. Transportation.
5. Labor.
6. Capital.

The Priorities Board has representatives of each of these elements in its membership, except capital, and a working arrangement as to that exists between the War Industries Board and the War Finance Board.

Another point of widest interest lies in the fact that in the preference list is to be found an indication of what constitutes war work. The War Department ruling in "war work or fight" is met by men, otherwise exempted, who are engaged in any of the classes of essential industries listed. Others not in this list are not necessarily considered non-essential.

In class one are included plants engaged principally in producing immediately necessary war supplies and foods, oil and natural gas, toluol and steel and material of hospitals and sanitariums; in class two are plants producing locomotive or traveling cranes, pig iron, construction work of war or navy departments in embarkation ports, harbors, fortifications, flood protection operations, docks, locks, channels, etc., street railways, electric light and power plants, gas plants, water supply plants and similar utilities; in class three are included plants producing mining tools and equipment and supplies for producing or transporting oil or gas, electric equipment, and also maintenance of public buildings other than hospitals and sanitariums; class four includes plants making fire brick, gray and malleable iron castings, etc.

The Priorities Division has grouped major industries according to their relative importance into four great classes, consideration being given in this grouping to these factors: (1) Intrinsic importance of the product for use during the war and the urgency; (2) necessity for maintenance or stimulating and increasing the total quantity of production; (3) proportion of

the capacity of the industry or plant devoted to the production of essential products. Each industry or plant is given a class number.

Judge E. B. Parker, chairman of the Priorities Division, states the determination of the relative importance of all industries and plants for both production and delivery by a single agency, the War Industries Board, renders it possible to maintain a well-balanced program with respect to the several factors entering into production, which includes, among other things, plant facilities, fuel supply or electrical energy, labor and transportation, without all of which production is impossible.

AGA HIGHWAY SIGNAL PROTECTING CURVE ON ROAD AT WINNETRA, ILL.

The inclusion of the industries and plants on this preference list does not operate as an embargo against all others, but the effect is to defer the requirements of all other industries and plants until the requirements of those on the preference shall have been satisfied. The paramount purpose of priorities is the selective mobilization of the products of the soil, the mines, and the factories for direct and indirect war needs in such a way as will most effectively contribute toward winning the war.

The industries and plants grouped under Class 1 are only such as are of exceptional importance in connection with the prosecution of the war. Their requirements must be fully satisfied in preference to those of the three remaining classes. Requirements of industries and plants grouped under Class 2, Class 3, and Class 4 shall have precedence over those not appearing on the preference list. As between these three classes, however, there shall be no complete or absolute preference. The division into classes is for the purpose of presenting a composite picture of the relative importance of the industries and plants embraced within each group.

The list is not to be considered permanent. Industries may be added or removed at any time.

U. S. Takes Inventory of All Steel Stocks.

A country-wide inventory of stocks of steel on hand is being made by the War Industries Board at the instance of its chairman, Bernard M. Baruch, in co-operation with the Census Bureau of the Department of Commerce. The ascertainment of the supply of steel is of first importance in view of the deficiency of production of steel for direct and indirect war needs.

The present estimated total production of steel in sight is 17,000,000 tons, and war demands total over 23,000,000 tons, with the demand constantly rising. In a recent interview with the Washington newspaper correspondents, Mr. Baruch announced he could not approve requests for an ounce of steel for domestic uses, because of the imperative need of meeting the war demands.

The Census Bureau through its equipped census-taking organization, is sending questionnaires to more than 40,000 manufacturers in this country asking complete reports of stocks of steel on hand down to the smallest holdings. It is sought to reach every manufacturer who uses steel in any way and in any amount in his industry. Cheerful compliance with the Government's plan to inventory the stocks on hand is expected confidently by the War Industries Board, because of the win-the-war need that prompts the step, and because of the general character of the inquiry.

A number of industries—such as the automobile industry—have been called upon to report stocks of steel on hand that the War Industries Board may be guided in making an intelligent administration of the steel stocks. Mr. Baruch decided, however, it was necessary to gather complete information from all steel-using industries and the War Industries Board determined on a general inventory from all manufacturers.

Government Base Prices for Cement.

The price-fixing committee of the War Industries Board, following a conference with the war service committee of the cement industry, has fixed the following basis of prices per barrel for Portland cement, f. o. b. at the locations named, for Government purchases, effective for the four months ending December 31, 1918:

Hudson, N. Y. $1.82; Northampeon, Pa., $1.72; Universal, Pa., $1.72; Fordwick, Va., $1.67; Bellevue, Mich., $1.77; Mitchell, Ind., $1.67; Hannibal, Mo., $1.67; Buffington, Ind., $1.57; LaSalle, Ill., $1.67; Mason City, Ia., $1.67; Iola, Kans, $1.72; Steelton, Minn., $1.67; Kingsport, Tenn., $1,62; Richard City, Tenn., $1.62; Harrys, Texas, $1.67; Houston, Texas, $1.77; El Paso, Texas, $1.92; San Antonio, Texas, $1.92; Trident, Mont., $1.87; Portland, Colo., $1.72; Devils Slide, Utah, $1.87; Brigham, Utah, $1.87; Salt Lake City, Utah, $1.87; Irwin, Wash., $1.92; Concrete, Wash., $1.92; Oswego, Ore., $1.97; Cement, Calif., $1.92; Davenport, Calif., $1.92; Crestmore, Calif., $1.92.

Shipments in bulk five cents per barrel less.

Shipments in paper bags 30 cents per barrel additional.

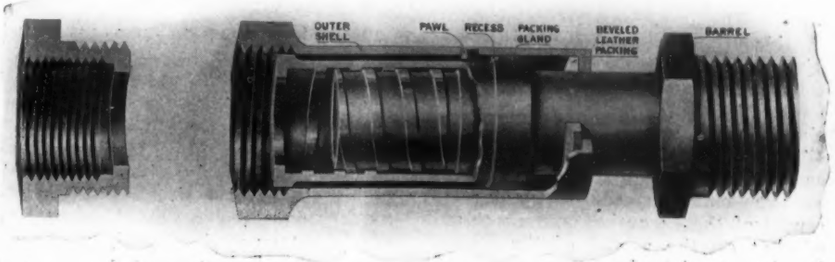
Shipments in cloth bags $1.00 per barrel additional.

Cement companies will issue credit to the department or contractor to whom the cement has been sold or shipped in cloth bags, at the rate of 25 cents each for the company's empty cloth bags bearing its brand, upon receipt in serviceable condition at its mill, freight prepaid, subject to the company's inspection and count; such bags to be returned within sixty days from date of receipt of shipment. The cloth bags are the property of the cement companies and are not to be used by the Government departments or their contractors for other purposes, and while in their possession are to be properly cared for and special attention given to their prompt return to the shipping mill.

NEWS OF THE SOCIETIES

(*Continued from page 257*)

first active president of the society. The early history of the association will be the subject of a paper by George W. Tillson, member since 1896 and second secretary of the society. N. S. Sprague will discuss the recent history of the organization and "Statistics and Documentary History of the Society" will be presented by Charles Carroll Brown, member since



SECTIONAL VIEW OF FORD EXPANSION COUPLING.

1895 and secretary for the past five years. "Modern Tendencies in Park Design" will be the title of a paper read by Wm. E. Harris, superintendent of parks, Buffalo, N. Y. The following committees, with the chairman named, will report: Parks and Parkways, C. E. Putnam, Roxbury, Mass.; City Planning, Nelson P. Lewis, New York City; Traffic and Transportation, Louis L. Tribus, New York City; Fire Prevention, Alcide Chausse, Montreal, Que.

An automobile trip about the city and its surroundings, including visits to the city water works and to industrial plants will be taken by members and guests during Friday afternoon.

On Friday evening, the session will start with the report of the committee on Street Cleaning and Refuse Disposal, George H. Norton, Buffalo, N. Y., chairman. Reports by the committees on Water Works and Water Supply, E. W. Cappelen, Minneapolis, chairman, and on Standard Forms, A. Prescott Folwell, New York, chairman, will be presented at this session. There will be a paper on a New Jersey water supply by Geo. W. Fuller, consulting engineer, New York City, and one by E. R. Conant, chief engineer, Savannah, Ga. Other papers will be:

"Motor Tractors in Street Cleaning," by Wm. F. Schwartz, street commissioner, Buffalo, N. Y.

"Buffalo's Water Supply," by George C. Andrews, water commissioner, Buffalo, N. Y.

"Niagara River Pollution," by George H. Norton, city engineer, Buffalo, N. Y.

Illuminating Engineering Society.

The Illuminating Engineering Society will hold its annual convention at the Engineering Societies Building, 29 West 39th street, New York City, October 10, 1918.

War-time lighting economies, the use of better lighting in speeding up war production and manufactures, the lighting of camps, effect of lighting curtailment on crime, and automobile headlight legislation will be among the subjects to be discussed by lighting authorities of national reputation.

New England Water Works Association.

With an attendance of about 150 the "win-the-war meeting" of the New England Water Works Association was held Sept. 11 and 12 at Chipman Hall and Tremont Temple, Boston, Mass. The questions receiving most consideration were those concerned with water waste prevention and the consequent saving of fuel and water; more efficient operation of pumping plants; rates and labor problems.

The morning session on Wednesday was devoted to the president's address, by president Carleton E. Davis; the report of the executive committee and of that on the award of the Dexter Brackett medal. The priorities committee, of which Willard Kent is chairman, also reported.

The fuel problem came in for close attention. Discussion was opened by president Ira M. Hollis, of the Worcester Polytechnic Institute who took up the situation in New England.

"Quartermaster Terminals Required for War Work" were described by Major Charles R. Gow, construction quartermaster at Boston. He estimated that a force of 5,000 men overseas would require 125,000 tons of supplies per day—or a 40-car train every twelve minutes of the 24 hours—equivalent to 21 6,000-ton cargo ships per day or the continuous service of about 600 ships. "The Construction of the Squantum Destroyer Plant" was described by Thomas C. Atwood, resident supervising engineer.

Patriotic enthusiasm greeted the address of Prof. William T. Sedgwick, past president of the association, and chairman of the Massachuset division of the National Security League, who spoke on "From Peace to War, from War to Victory, from Victory to Judgment."

The Thursday morning program opened with a paper by David A. Heffernan, superintendent of the Milton, Mass., water works, on "Practical Methods for Detecting Leaks in Underground Pipes." He described the test-pit method and the use of the aquaphone and the pitometer. Frank J. Gifford, superintendent of the Dedham, Mass., waterworks, presented the report of the committee on frozen water pipes, of which he is chairman. He summarized the experiences of 95 superintendents who replied to the committee's questionnaire. The subject of electric thawing was discussed.

The afternoon program was opened by a paper by Charles T. Main, consulting engineer of Boston, on "Boiler Room Practice and Adaptation of Same to Changing Fuel Conditions." He warned of a shortage in New England and urged immediate fuel saving measures. George W. Carpenter took up in detail the methods of reducing water waste.

In a paper on "Expediency of Raising Water Rates to Offset Increasing Costs," John J. Moore, consulting engineer, Boston, urged that meter rates should not be changed in a sliding scale in which lower rates were assessed on large quantities. He said that large consumers frequently made such demands on the plant that increases in capacity were often necessitated. He urged a flat meter rate.

"Experience on Labor Troubles" was the subject of a symposium opened by Carleton E. Davis, chief, bureau of water, Philadelphia. He discussed the pension system as a stabilizing influence on employes. City manager Clarence A. Bingham described conditions in his city. John M. Diven, superintendent of waterworks of Troy, N. Y., and secretary of the American Waterworks Association, spoke of the difficulty of increasing wages under a budget system.

PERSONALS

Goebel, L. H., has resigned as superintendent of filtration and chief chemist of the water filtration plant of the Union Stock Yard and Transit Company, Chicago, Ill., to become associated with the engineering staff of Wallace & Tiernan Company, New York, manufacturers of chlorine control apparatus and sanitary engineering specialties. After graduation in sanitary engineering at Purdue University, Mr. Goebel was attached for a time to the Union Stock Yards filtration plant and subsequently was sanitary engineer, city chemist and bacteriologist of Cedar Rapids, Iowa, returning to the Union Stock Yards Company early in the present year. Mr. Goebel will be attached to the Chicago office of Wallace & Tiernan Company.

Gremmelsbacher, Chas., has been appointed superintendent of city water works of Sandusky, O., to succeed Martin Ebner, who has resigned.

Holcomb, W. H., secretary and treasurer of Salem, N. C., succeeds L. P. Tyree, resigned, as city commissioner of finance.

Jeup, B. J. T., formerly city engineer, has been elected director of the Indianapolis Water Co., to fill the place vacated by Harry E. Jordan.

Lilley, Ralph E., and Jacobs, R. E., assistant secretary and engineer, respectively, of Shreveport, La., have resigned.

Lingenfelder, Frank, has been appointed city engineer of Indianapolis, Ind., to fill the vacancy caused by the death of Henry W. Klausmann.

Frederick J. McLeod, of Cambridge, Joseph B. Eastman, of Winchester, and Everette E. Stone, of Springfield, have been appointed members of the present public service commission of Massachusetts.

Monoghan, Dr. Frank J., New York, N. Y., mayor Hylan's personal physician, who has been secretary to the Board of Health, has been appointed acting deputy commissioner upon the resignation of Dr. Knause.

Moroe, M. L., technical assistant engineer of Lansing, Mich., has been named acting city engineer.

Moore, mayor Edmund F., of Lisbon, Ohio, died recently following an automobile accident.

Mosher, Capt. Henry E., for four years connected with the Rochester office of the New York state highway department, has been killed in action in France.

Sira, Ben., for the last sixteen years superintendent of streets in Dallas, Tex., has resigned.

Schuettler, H. F., formerly chief of the Chicago police department, died recently after a short illness.

Walker, Isaac S., engineer in charge of the sewage disposal division of the bureau of surveys, Philadelphia, Pa., has resigned to become manager and engineer of the Chester Water Co.

ADVANCE CONTRACT NEWS

ADVANCE INFORMATION BIDS ASKED FOR

CONTRACTS AWARDED ITEMIZED PRICES

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
			STREETS AND ROADS.	
Ind.	Noblesville	10 a.m., Sept. 28	Constructing gravel road	H. O. Cottingham, Co. Aud.
N. Y.	Hempstead	10 a.m., Sept. 28	Constructing about 12,350 sq. yds. Warrenite	Archibald G. Patterson, Town Supt. of Highways.
O.	Cincinnati	noon, Sept. 30	Grading, setting granite curb, paving with asphalt and constructing necessary drains and inlets and laying 6-inch water mains	Chas. F. Hornberger, Dir. of Public Service.
O.	Canton	10 a.m., Sept. 30	1,615.2 cu. yds grading	W. C. Schick, Co. Clk
Pa.	Greensburg	noon, Sept. 30	Constructing following county roads: 1.79 mi., 16 ft. wide, concrete base and curb and brick surface; 3.22 mi., 17 ft. wide, slag base, concrete curb and brick surface	John S. Sell, Co. Contr.
O.	Elyria	2 p.m., Sept. 30	Rebuilding with waterbound macadam road sections which have failed, 15 ft. wide, 1.7 mi. long	Clinton Cowen, State Highway Comr.
N. Y.	New York	noon, Sept. 30	Repaving with asphalt block on present concrete foundation spaces between railway tracks; paving with slide block	C. D. Van Name. Boro. Pres., Richmond, St. George, S. I.
O.	Findlay	Oct. 1	One mile waterbound macadam	A. R. Taylor, County Engr.
Kan.	Wichita	Oct. 1	Constructing about 7⅝ mi. concrete road, 18-ft. roadway	M. Roseberry, Engr.
O.	Van Wert	Oct. 1	2 miles macadam road, to cost about $15,000	T. K. Priddy, Co. Road Engr.
Tex.	Rockport	2 p.m., Oct. 1	Improving 10 miles of road, including concrete paving	County Clerk.
La.	Shreveport	10 a.m., Oct. 1	Constructing 9.11 mi. improved earth road involving 55,000 cu. yds. earth excavation, including grubbing, 180 lin ft. 24-in. concrete pipe, concrete culverts and bridge work	W. F. Cooper, Parish Engr.
Ala.	Ozark	Oct. 1	Improving 3 miles of road	County Clerk.
N. Y.	New York	noon, Oct. 1	Constructing concrete curb with steel guard; resetting bluestone curb; laying vitrified brick gutter on concrete foundation; relaying stone block guter on concrete foundation	C. D. Van Name. Boro. Pres., Richmond, St. George, S. I.
Cal.	Santa Ana	Oct. 2	Paving with concrete	C. C. Bonebrake, City Engr.
Cal.	Santa Ana	Oct. 2	Grading 5.47 mi. of roads, involving 40,000 cu. yds. excavation	Bd. of Co. Supervisors.
N. J.	Trenton	10:30 a.m., Oct. 2	48,880 sq. yds. bituminous concrete surfacing (Warrenite) in Morris County and 48,580 sq. yds. concrete surfacing in Cape May Co.	State Hwy. Comn.
O.	Hamilton	2 p.m., Oct. 3	Road repair	W. W. Crawford, Co. Clerk.
O.	Silverton	noon, Oct. 5	Constructing concrete combined curbs and gutters	A. M. Wagner, Clk., Room 711, Fourth Nat. Bank Bldg., Cincinnati, O.
Wash.	Ritzville	2:30 p.m., Oct. 7	Grading, draining and surfacing with gravel or crushed rock about 8.7 mi. of highway	F. R. Hewitt, Const. Engr.
O.	Oak Harbor	Oct. 8	Grading, curbing and paving street	Rollin Gratop, Village Clerk.
Ind.	Bloomington	2 p.m., Oct. 8	Road construction	Horace Blakely, Co. Aud.
Ind.	Bloomfield	2 p.m., Oct. 8	Constructing two macadamized roads	George E. Kidd, Co. Aud.
Ind.	Wabash	2 p.m., Oct. 8	Constructing gravel or stone road	Frank P. Kircher, Co. Aud.
			SEWERAGE.	
O.	Lima	Sept. 30	Constructing trunk sewers to cost $155,000 on a number of streets	V. C. Miller, Engr.
Ia.	Creston	Oct. 1	Sewer improvements	Howard Miller, City Clk.
Ia.	Charles City	2 p.m., Oct. 2	Construction work for joint drainage district	C. R. Jonts, Co. Aud.
Ia.	Dubuque	8 p.m., Oct. 3	Constructing 8-in. tile masonry sewer, 630 ft. long	City Engineer.
Colo.	Brighton	8 p.m., Oct. 4	Sewerage system, involving about 3,000 ft. 12-in., 1,600 ft. 10-in., and 27,000 ft. 8-in. sewer, 74 manholes, 19 automatic syphons and 1,626 wyes	Royal D. Salisbury, Con. Engr., 1415 E. Colfax, Denver, Colo.
N. J.	Newark	9:30 a.m., Oct. 8	Constructing portion of intercepting sewer branch, either by tunnel or open trench method, 48-in. circular brick sewer in case of former and 30 and 36-in. circular concrete sewer in case of latter; constructing superstructure for effluent controlling chamber, with appurtenances; constructing sewer branch section involving excavation for 450 ft. 16-in. cast-iron pipe or 16x24-in. concrete sewer and furnishing and laying 16 tons 16-in. cast-iron pipe	Passaic Valley Sewerage Commission, 31 Clinton St.
Ia.	Muscatine	1 p.m., Oct. 8	Complete steam-driven pumping plant, including one 36-in. and one 24-in. double-suction centrifugal pumps	Elliott & Harman Eng'g Co., Peoria, Ill.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
N. Y.,	Brooklyn	3 p.m., Oct. 15.	Sewage disposal system on State Hospital	E. S. Elwood, Sec. State Hospital Com., Albany, N. Y.
O.,	West Park	Oct. 10.	Laying vitrified sewer pipe on four streets, involving about 8,600 ft., 24 brick catch basins and 12 manholes.	Village Clerk.
Pa.,	Beaver Falls	7 p.m., Oct. 28.	Designing, engineering and other services in connection with extension of present outfall sewer, involving about 1 mile of 24-in. sewer	Harry T. Barker, City Engr.

WATER SUPPLY.

Cal.,	Sacramento	10 a.m., Oct. 1.	Furnishing plans and installing complete single-stage, double-suction, horizontal shaft type, centrifugal pump-pumping unit, 10, 15 to 20 million gals. capacity per day; 36-in. riveted steel suction line; 30-in. c.-i. suction line; variable speed motor	M. J. Desmond, City Clerk.
Minn.,	Franklin	4:30 p.m., Oct. 1.	Supplying gate valves, tees, elbows, flanges, small pieces steel and iron pipe, bends, lead and jute for joints, etc.	G. H. Lohneis, Virginia, Minn.
D. C.,	Washington	Oct. 1.	Two well-drilling machines, gasoline engine driven, capable of drilling 8-in. holes 800 ft. deep, traction type (Proposal No. 1118)	Gen. Engr. Depot, U. S. A., 1438 U St. Washington, D. C.
Minn.,	St. Claud	1 p.m., Oct. 1.	Constructing water mains	A. W. Buckman, City Clk.
N. Y.,	New York	10:30 a.m., Oct. 2.	Furnishing and delivering ten motor-driven hose wagons.	Thos. J. Drennan, Fire Comr.
Ind.,	Elkhart	10 a.m., Oct. 11.	Furnishing 3,000 ft. rubber-lined cotton double jacket fire hose, 2½ in., 50 ft. sections	M. U. Demarest, Pres. Bd. of Public Works.

LIGHTING AND POWER.

Colo.,	Denver	2 p.m., Oct. 1.	Furnishing 5,000-kw. vertical hydraulic turbine and generator	U. S. Reclamation Service, Washington, D. C.
Ida.,	Minidoka	Oct. 1.	Constructing power plant extension and furnishing hydraulic turbine and generator	U. S. Reclamation Serv., Dept. of Interior, Denver, Colo.
D. C.,	Washington	2 p.m., Oct. 7.	Three electric motors, a.c., ⅓ hp., 110 volts, 40 cycles, about 1,200 r.p.m.; 94 rheostates suitable for ⅓ hp., 110 volt d.c. motors, and 41 rheostats suitable for ⅓ hp., 220 volt d.c. motors	Purchasing Agent, P. O. Dept.

FIRE EQUIPMENT.

Wash.,	Bellingham	Sept. 30.	Triple combination fire truck, to cost about $12,000	Fire Chief Stearns.
Minn.,	Duluth	11 a.m., Sept. 30.	Automobile roadster for fire department	B. Silberstein, Comr. of Pub. Safety.
O.,	Cincinnati	noon, Oct. 3.	Furnishing 7-passenger autoombile for fire department, price not to exceed $3,000	Ernst von Bargen, City Purchasing Agent.

BRIDGES.

Ind.,	Noblesville	10 a.m., Sept. 28.	Bridge work on road	H. O. Cottingham, Co. Aud.
Ind.,	Frankfort	2 p.m., Sept. 28.	Repairing three bridges	Edward Spray, Co. Aud.
Ia.,	Eldora	Sept. 30.	Constructing bridge	County Engineer.
Minn.,	Gaylord	2 p.m., Sept. 30.	Reinforced concrete culvert, 8x8x60	Fred Hoppenstedt, Co. Aud.
Pa.,	Ebensburg	noon, Sept. 30.	Furnishing and erecting timber bents and cross bracing for strengthening highway bridge	Herman T. Jones, County Controller.
W. V.,	New Martinsville	2 p.m., Oct. 1.	Constructing seven concrete bridges	S. Myers, Co. Clk.
Minn.,	Grafton	2 p.m., Oct. 1.	Constructing bridge, 20-ft. clear span and 18-ft. roadway.	State Highway Com., Guardian Life Bldg., St. Paul, Minn.
Ill.,	Taylorville	Oct. 1.	Steel and reinforced concrete bridge construction	C. Pennington, Supt. of Hwys.
N. D.,	Jamestown	Oct. 2.	Constructing bridges	Co. Aud.
Cal.,	Ventura	2 p.m., Oct. 3.	Constructing protection jetty to highway bridge	County Surveyor.
O.,	Hamilton	10 a.m., Oct. 9.	Concrete steel box culverts	W. W. Crawford, Co. Clerk.
Wash.,	Okanogan	2 p.m., Oct. 9.	Constructing highway bridge	J. D. Hubbard, Clk. Co. Comrs.
O.,	Canton	10 a.m., Oct. 11.	Reconstructing concrete bridge	W. C. Schick, Co. Clk.
Cal.,	Los Angeles	noon, Oct. 15.	Constructing reinforced concrete diversion dam and bridge on Gila River, Ariz., involving about 31,671 cu. yds. earthwork, 17,235 cu. yds. concrete and placing about 738,362 pounds reinforcing steel and 18 steel gates with operating machinery	W. M. Reed, Chief Engr., U. S. Indian Serv., Dept. of Interior, Washington, D. C.
Pa.,	Sunbury	Oct. 15.	Constructing bridge	M. J. Flynn, Engr., Mt. Carmel, Pa.

MISCELLANEOUS.

Tenn.,	Memphis	11 a.m., Sept. 28.	Constructing about 1,231,000 cu. yds. earth work	Mississippi River Comn., Custom House, Memphis, Tenn.
D. C.,	Washington	Sept. 28.	Furnishing following supplies for Panama Canal: Electric switches, pipe fittings, valves, etc.	A. L. Flint, Purch. Agent for Panama Canal, Washington, D. C.
Mass.,	Hingham	Sept. 30.	Constructing elevated steel tanks to cost about $15,000 (Specification No. 3442)	Mississippi River Commission, Bureau of Yards & Docks, Navy Dept., Washington, D. C.
N. J.,	Newark	11 a.m., Sept. 30.	Repairing three boilers, and installing ash conveyor and foundation for contemplated extra boiler	Fred A. Phelps, Engr., Union Bldg., Clinton St.
Mass.,	Nahant	noon, Sept. 30.	Constructing pile wharf	U. S. Engr. Office, Boston, Mass
Tex.,	El Paso	Oct. 1.	Constructing canals on Rio Grande irrigation project, involving about 63,800 cu. yds. excavation, near Hatch, New Mexico	U. S. Reclamation Service, Washington, D. C.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL		NATURE OF WORK	ADDRESS INQUIRIES TO
D. C.,	Washington	Oct.	1.	170 carriages for 60-in. portable searchlights (Proposal No. 1108)	Gen. Engr. Depot, U. S. A., 1438 U St.
Pa.,	Philadelphia	noon, Oct.	1.	Dredging in Frankford Creek	Geo. S. Webster, Director of Wharfs, Docks & Ferries.
Pa.,	Philadelphia	noon, Oct.	1.	Erecting, drilling and riveting in place 164 large cast-iron brackets on single-column bents in connection with elevated railway construction	Wm. S. Twining, Director of City Transit.
D. C.,	Washington	2 p.m., Oct.	4.	Furnishing track scale complete at St. Elizabeth's Hospital	Chief Clerk, Dept. of Interior.
Tenn.,	Memphis	Oct.	7.	Furnishing and loading about 12,000 cu. yds. riprap stone on government barges	Mississippi River Com., Custom House.
Tenn.,	Memphis	11 a.m., Oct.	7.	Constructing about 960,000 cu. yds. earthwork	Mississippi River Com., Custom House.
N. Y.,	Albany	noon, Oct.	8.	Four barge canal terminal improvements, as follows: Constructing freight house, heating, and installing plumbing and water supply systems at Erie basin, Buffalo; repairing existing bulkhead and constructing freight house and crane track at East River, N. Y. C.	W. W. Wotherspoon, Supt. of Public Works.
N. J.,	Atlantic City	Oct.	10.	1½-ton motor truck for water department	L. Van Gilder, Supt. of Water Dept.
Neb.,	Mitchell	Oct.	15.	Constructing 12 miles of main lateral, North Platte irrigation project, involving about 167,000 cu. yds. excavation, near Torrington, Wyo	U. S. Reclamation Service.
D. C.,	Washington	Oct.	18.	30,000 carbons, medium intensity, for use with 60-in. portable searchlights (Proposal No. 1120)	Gen. Engr. Depot, U. S. A., 1438 U St.
Port Rico,	San Juan	10 a.m., Nov.	25.	Construction and installation of garbage and refuse incinerator plant	Bur. of Insular Affairs, War Dept., Washington, D. C.
D. C.,	Washington	Sept.	28.	Furnishing following Panama Canal supplies: cutouts, electric switches, sockets, truck lights, siphons, pipe, fittings, valves, pipe covering, rubber hose, leather and rubber belting, etc. (Circular No. 1230)	Gen. Purchasing Officer, Panama Canal, Washington, D. C.

STREETS AND ROADS.

Birmingham, Ala.—City plans to spend about $150,000 on three of main highways of city and county.

Texarkana, Ark.—The council will consider bids on the paving of Pine St.

Los Angeles, Cal.—Council referred to the finance committee the request of the harbor commission for an appropriation of $27,000 to defray the cost of the roadway from the Southwestern Shipbuilding Co.'s plant to the Long Beach line at Terminal Island.

Modesto, Cal.—City may improve its highway system; about $15,000.

Denver, Colo.—City did not receive bids for grading and draining about 21 miles of ditch, and crown work, and 21 miles of shale surfacing from Rifle to Meeker in Garfield and Rio Blanco Counties.

Greeley, Colo.—This city contemplates the construction of sidewalk on the south side of Cranford place, between Tenth Ave. and Second Ave.

Washington, D. C.—See "Miscellaneous."

Pensacola, Fla.—Work on the West Jackson St. road is to start soon, according to Street Commissioner Hinrichs. The road will be curbed and treated with cinders.

Pensacola, Fla.—Part of $210,000 will be used as bond issue to pay expenses of laying pavement.

Darien, Ga.—McIntosh county voted Sept. 11 in favor of issuing $48,000 road and bridge bonds. J. G. Legare, clerk county commissioners.

Idaho—The hill between Grangeville Whitebird will disappear. A road will be built 22 miles long at cost of $250,000.

Des Moines, Ia.—An ordinance issuing bonds in the amount of $44,526.37 to pay half the cost of paving and curbing Douglas Ave. from Beaver drive to West 58th St., was passed by the city council.

Des Moines, Ia.—The state executive council is considering letting the contract on a percentage basis for a cement retaining wall along the driveway to be laid from Eighth St. to Eleventh St., along the bluff on the south edge of the capitol extension tract. The council plans to allow the contractor a percentage above the cost and will, through the state highway commission, keep a complete check on the cost of each item.

Lewiston, Idaho.—County Comrs. were petitioned to create Potlatch Highway District, embracing about 42 sq. mi., practically all northern section of Nez Perce County on Potlatch west of Southwick district. Petition contains more than 20 per cent of votes cast at last election, as required by law.

Lewiston, Idaho.—W. C. McNutt, mining engineer of Elk City, is in Lewiston to urge action by Commercial Club in matter of constructing roads into isolated mining districts. Mr. McNutt states that he considers prospects favorable for securing Government appropriation for building modern highway along South Fork into Elk City mining region, a measure having been introduced in Congress for an appropriation to give assistance to mining districts. Survey shows that road from point near forest reserve on South Fork to Elk City would be about 47 mi. long and would cost approximately $400,000.

Fox Lake, Ill.—W. G. Nagle, village president, received no bids Sept. 6 for constructing earth road through section 4 in Grant Twp., approx. 30,000 cu. yds. of excavation, filling and grading.

Indianapolis, Ind.—The following improvements will be made: Brookside Parkway, South Drive, from a point 4 ft. east of the east property line of Keystone Ave. to a point 1 ft. west of the west property line of Oxford St. (except the sidewalk wings at Tacoma Ave., Temple Ave. and Rural St. These improvements will consist of grading and paving the sidewalk with cement to a uniform width of 6 ft., placed ½ ft. from the property line; providing double strength street crossings at Tacoma Ave. and Temple Ave.; providing double strength alley crossing at first alley east of Rural St.; grading the lawns wherever disturbed in the construction of sidewalk. Fred C. Gardner, Edward A. Stuckmeyer, Charles E. Coffin, Samuel E. Rauh, Bd. of Park Comrs. of City of Indianapolis.

Indianapolis, Ind.—This city is assessing itself for the improvement of Brookside Parkway, South Drive, from a point 66.19 ft. west of the west property line of the first alley northwest of Nowland Ave., to a point 5 ft. northwest of the north property line of Nowland Ave., by grading and paving the sidewalk with cement to a uniform width of 6 ft., placed 5 ft. from the property line; providing a double strength alley crossing at the above-mentioned alley; grading the lawns wherever disturbed in the construction of sidewalk.

Indianapolis, Ind.—The following work is to be done here: The improvement of the North Drive of Brookside Parkway from the west curb line of Hamilton Ave. to the property line of the first alley east of Samoa St. (except the sidewalk wings at Hamilton Ave. and Samoa St.), by grading and paving the sidewalk with cement to a uniform width of 6 ft., placed 6 ins. from the property line; providing double strength alley crossing at first alley east of Hamilton Ave.; grading the lawns wherever disturbed in the construction of the sidewalk. Fred C. Gardner, Edward A. Stuckmeyer, Charles E. Coffin, Samuel E. Rauh, Bd. of Park Comrs. of City of Indianapolis.

Lebanon, Ind.—Bids received Oct. 1, 1918, at 10 a. m., by treasurer of Boone county, for sale $18,500 highway improvement bonds, 4½%, 10 years. J. L. Thomas, treasurer.

Mt. Vernon, Ind.—Treasurer of Posey county will sell on Oct. 3 highway impt. bonds, $14,000 and 3,600, 4½%, 10 years. Geo. J. Ehrhardt, treasurer.

Peru, Ind.—Bids received Oct. 2, 1918, at 2 p. m., by treasurer of Miami county, for sale $13,600 highway improvement bonds, 4½%, 20 years. Henry Knauff, treasurer.

Winchester, Ind.—This city is selling $5,000 of highway impt. bonds.

Independence, Kan.—This city intends to do grading, paving, curbing and guttering on Eighth St. from the south line of Poplar St. to the north line of L T St.

Topeka, Kan.—Douglas County will lay 2¼ miles of hard surface road extending across south half of the county on old Santa Fe Trail.

La Fourche Parish, La. (P. O. Thibodeaux).—Road bonds for District No. 1 were voted; $35,000.

Baltimore, Md.—During the next two years the state highway commission, Garrett Bldg., plans an expenditure of approximately $9,460,000, as follows: $3,000,000 for new highway construction, $3,000,000 for highway repairs and maintenance, $1,600,000 for state aid county aided roads, $360,000 for bridges.

Duxbury, Mass.—This town is doing some street work.

New Bedford, Mass.—Highway bonds will be issued; $69,439.50.

Detroit, Mich.—Walkerville Council decided to undertake an extension of the Walker Road pavement; about $10,000.

Detroit, Mich.—This city will do the following work: Grading and paving Crane Ave. from the curb line to Sylvester St. to the south line of Forest Ave.; grading and paving Glendale Ave. from the westerly line of Highland Park Village to the east curb line of 12th St.; grading and paving Hulburt Ave., from the south curb line of Sylvester St. to the south curb line of Warren Ave.; grading and paving Seebaldt Ave. from the west line of Grand River Ave. to the east curb line of Northfield Ave.; grading and paving Alley No. 886, being all the alleys between La Salle Blvd., 14th Ave., La Salle Gardens North and Nicolet Ave.; grading and paving Alley No. 887, being all the alleys between La Salle Blvd., Frontenac Ave., La Salle Gardens South and La Salle Gardens North; for grading and paving Alley No.

889, being the east and west alley between La Salle Blvd., 14th, Lothrop and La Mothe Aves.; grading and paving Alley No. 896, being the alley between Loraine, Linwood, Stanley and McGraw Aves.; grading and paving Alley No. 864, being the alley between Hamilton and Montclair Aves., Charlevoix and Goethe Sts.; grading and paving Alley No. 841, being the alley between Iroquois, Burns, St. Paul and Kercheval Aves.; grading and paving Alley No. 871, being the "T" alley between Townsend, Baldwin, Kercheval Aves. and Waterloo St.

Detroit, Mich.—The common council of the city has ordered Merrick Ave. from the west line of 12th St. to the west line of alley first east of 14th Ave. to be graded and paved.

St. Paul, Minn.—Doane St. will be graded from Raymond Ave. to Columbus Ave.

St. Paul, Minn.—City will do following improvements: Construct cement tile sidewalk 6 ft. wide on west side of Farrington Ave. from Carbon St. to Maryland St.; construct cement tile sidewalk 6 ft. wide on east side of Fisk St. between Dayton and Selby Aves.; grade Dudley Ave. between Chelmsford St. and Cleveland Ave., grade and pave alley in rear of Lots 1 to 6, inclusive, in Block 9, Whitney and Smith's Addition, from 5th St. to 6th St.

St. Paul, Minn.—City will construct cement tile sidewalk 6 ft. wide on west side of Fulton St. from Palace St. to Jefferson Ave.

Aberdeen, Miss.—$40,000 worth of road bonds of Monroe county were bought by John Nuveen & Co., par, less $440 for expenses, 5½%, 25 years.

Greenwood, Miss.—Road bonds will be sold Oct. 7, $99,000, 5%. A. R. Bew, county clerk.

Great Falls, Mont.—O. A. Ruffle, engineer, state highway commission, reports construction work on the Sun River road, 18 miles long and 16 ft. wide, may start this fall. Cost is estimated at $80,000.

Kalispell, Mont.—Ferris & Hardgrove, Spokane, purchased bonds, $210,000, issued by Flathead County. Purpose of bonds is to take up outstanding road warrants of county. Rate of interest is 5½ per cent.

Charleston, Mo.—On construction state aid road the commissioners of Mississippi county considers expending about $241,000.

St. Joseph, Mo.—Commissioners of Buchanan county will expend aproximately $385,000 on construction work on Jefferson highway.

Columbus, Neb.—Ordinance passed by city council authorizing the issuance Paving District No. 2 bonds, $6,000.

Columbus, Neb.—City is issuing m. and s. Paving District No. 2 bonds; $31,000, 6 per cent.

Lincoln, Neb.—This city is issuing paving bonds to cover cost of improvements in Paving Districts 368, 374, 383, 384 and 385.

Minden, Neb.—This city passed an ordinance establishing a sidewalk along certain lots and blocks in Minden, and also along certain lots and blocks in Jensen's addition to Minden.

Newark, N. J.—City contemplates following work: Paving of North Sixth St. from Bloomfield Ave. to Fourth Ave.; repaving of South 11th St., from Springfield Ave. to Avon Ave.; repaving of Ferry St. from Lentz Ave. to the easterly side of Blanchard St. Thomas L. Raymond, director.

Newark, N. J.—South Arlington Ave. will be extended as follows: Beginning in the southwesterly line of Central Ave. at a point therein distant 267.36 ft. northwesterly from the intersection of the southwesterly line of Central Ave. with the northwesterly line of Freeman Ave. as measured along said southwesterly line of Central Ave., thence in a course south 26 degrees 51 minutes 26 seconds, west of 836.72 ft. to the northeasterly line of Elmwood Ave. at a point therein, distant 208.25 ft. from the intersection of the northeasterly line of Elmwood Ave. with the northwesterly line of Freeman Ave. as measured along said northeasterly line of Elmwood Ave.

Passaic, N. J.—City will grade Sixth Abe. between Madeline Ave. and Second St.; also on Washington Ave., between Second and Fourth St.

Albuquerque, N. Mex.—Commissioners of Bernalillo county are considering paving Fourth St., and transforming the street into "Alameda Boulevard"; estimated cost, approximately $140,000.

Clovis, N. M.—City is in market for paving 13,500 sq. yds. pavement No. 1 vitrified brick, 4-in. concrete base, with asphalt filler and 3,200 lin. ft. curb and gutter. City Engr. O. Dobbs.

Auburn, N. Y.—$2,606.03 will pay for road work done for this county.

Salamanca, N. Y.—See "Sewerage."

Mooresville, N. C.—The date has been changed from Sept. 20 to Sept. 30 for receiving sealed bids for the general street improvement bonds to the amount of $50,000.

Morganton, N. C.—Sealed bids for the purchase of $5,000 of 5% 30-year road bonds issued on behalf of Silver Creek township, Burke county, N. C., will be received by the board of commissioners of Burke county Oct. 14. J. R. Howard, clerk of board of commissioners, Morganton, Burke county, N. C.

Alliance, O.—The Portage County Improvement Association will improve certain portions of the Windham-Drakesburg road at not more than $22,000.

Brookville, O.—Village receiving bids Sept. 30 for an issue $10,000 Maple St. improvement bonds. J. E. Smith, village clerk.

Canton, O.—This city will do grade work in Oby Place, N. W., from Cleveland Ave. N. W. to Fulton Road N. W.

Canton, O.—The $190,000 bond issue for the completion of the Lincoln Highway in Stark county has been approved by the capital issues commission of Washington, but the completion of the Massillon-Cal Canal Fulton road will not be undertaken.

Cincinnati, O.—Wekking alley will be improved from Maiden alley to Dudley St., by setting granite curbs and paving the roadway with brick.

Cincinnati, O.—County commissioners will spend $40,000 in improvement of Round Bottom road from Batavia Pike to Broadwell road.

Dayton, O.—City commission at their next meeting will grant the opening and extension of Illinois Ave. from Buchanan to Wayne Ave. It will be paved then as soon as the city is in financial condition to justify this improvement.

Dayton, O.—Extensive improvements, including a board walk system for the convenience of tubercular patients, are being planned for the bi-county tuberculosis hospital on the Covington pike, according to announcement by Secretary Daniel W. Iddings, of the hospital board. That section of the board walk extending between the two hospital buildings and the service building will be covered. This improvement is to be installed this year, together with small bridges over the ravines, much-needed grading, etc. Cost will represent a financial outlay of between $500 and $10,000.

Geneva, O.—Drexel St. is to have sidewalks.

London, O.—No bids received for North Main St. paving. Funds appropriated were $17,000.

Middletown, O.—This town will pave all of Third St.

Salem, O.—Authority was granted to continue highway construction.

Wauseon, O.—Village calls for bids Oct. 14 for an issue street improvement bonds, $4,500. Jas. C. King, clerk.

Florence, Ore.—The county court informed a delegation of citizens from the Lake Creek valley that the court expects next year to improve one of the roads into the valley.

Middletown, O.—Road building improvement on Third St. will be extended to the Big Four if the material can be secured. Added improvement will cost about $5,000.

Woodsfield, O.—Bids for Creamery St. improvement bonds, $3,600, received by Geo. P. Darr, village clerk, Oct. 7.

Renfrew, Ont.—The construction of macadamized roads is contemplated by the city council. J. R. Stewart, engineer.

Astoria, Ore.—The common council of the city has declared its intention to improve 37th St. from a point 69 ft. south of the south line of Commercial St. et al. and 38th St. laying north and west of the right of way of the street car tracks, according to plans and specifications therefor to be prepared by the city surveyor. E. G. Gearhart is auditor and police judge.

Oregon City, Ore.—It is intended to improve Singer Hill. The idea is to pave the hill from the intersection of Seventh and Center Sts. to the foot, at 10th St., which would connect the hard-surfaced streets of the main part of town with the newly laid Richmondite, which now extends on upper Seventh from Center to John Q. Adams St.

Pineville, Ore.—Proposed post road up Crooked River will become a state highway.

Portland, Ore.—The capital issues committee has denied the application of the Oregon state highway commission the right to issue $570,000 bonds to complete nine units by graveling the surface.

Portland, Ore.—City will re-call for redemption street extension bonds Nos. 21 to 23, inclusive, dated Apr. 1, 1916. After Oct. 1 no interest will be paid. Wm. Adams, City Treas.

Allentown, Pa.—Highway Commissioner O'Neil declined to readvertise for bids for construction of five miles of state highway in Heidelberg township, Berks county, on which the best price was $162,000. The Berks county commissioners asked that a new invitation be made for bids. Mr. O'Neil holds that the price, considering war conditions, is favorable, and that as the national government is paying $10,000 a mile and the county is getting credit for what it paid for freeing the William Penn highway of toll roads between Reading and Harrisburg, its net share of the contract would be about $51,000. The project has been given government approval and he stated that he though work should go ahead, as it is a main highway and post road.

Beaver, Pa.—This city contemplates construction of a sidewalk and curb on the western side of Hopewell Ave. from the intersection of Hopewell Ave. with Franklin Ave. northwardly to the intersection of Hopewell Ave with Sheffield Ave., a distance of approximately 900 feet.

Bethlehem, Pa.—All property owners whose property abuts on public streets will have to construct concrete curb gutters and sidewalks in front of their property.

Erie, Pa.—City council passed an ordinance for closing in and paving the water course for proposed Haywood Hollow sewer, to cost $50,000. Segmental blocks will be used.

Providence, R. I.—The town council is making arrangements to install curbing on Taunton Ave. between Six Corners and Cora St. This section is to be paved with asphalt and will meet the cement road to be laid between Cora St. and the State line on the pike. It is probable that the board will order improved sidewalks on the same section of the street.

McCormick County, S. C. (P. O. McCormick).—Bids received until Oct. 10 for a. and o. highway bonds; $85,000, 5 per cent, 16⅔ years.

Nashville, Tenn.—State Highway Dept. did not award contract for road construction in Franklin, Bedford, Moore and Greene Counties.

Dallas, Tex.—At an estimated cost of $30,000 the state highway commission considers improving Maple Ave. road between Lone Field and Dallas.

Galveston, Tex.—Government requested Galveston County to build a highway to connect with Government's permanent highway system at west end of Federal air station site.

Port Arthur, Tex.—Concrete roadway 16 ft. wide with shell shoulders will be built, to cost $24,000 per mile, to close gap of 11 miles of road between here and Beaumont.

Schulenberg, Tex.—Fayette county will take bids Oct. 15 for an issue road bonds, $100,000.

Salt Lake City, Utah.—See "Bridges."

Husum, Wash.—Citizens of this town contemplates constructing a 10-ft. concrete road with 8 ft. of gravel on one side from Hood View road at White Salmon and from Underwood to the corner of section 22 at Guler.

Olympia, Wash.—The state highway commission voted to complete paving contracts on the Pacific highway between Olympia and Tacoma, also an overhead crossing at Elma, the Oldtown, Riverside and Moxee roads in Yakima, paving projects in Seattle and Tacoma and all state work now contracted, the latter amounting to about $500,000.

Olympia, Wash.—The highway improvement projects, including the five miles of paving between Olympia and Camp Lewis and the concrete bridge over the Nisqually River, were approved by the state highway board as necessary projects and word sent to the National Highway Council. Acting under instructions from the National Highway Council, the highway board passed on and approved all of the state, county and city projects, including sidewalk and bridge jobs, on which it had information, with a few exceptions. This was done so that the work could go on and ma-

terials and supplies be secured. A few projects were held over until the next board meeting for action. Under the national board's rulings, the state board will aprove only such projects as are of primary military necessity, are of national economic value, are of extreme local value where work has progressed so that postponement would be a hardship and projects that are of agricultural need. The Olympia-Camp Lewis improvement was held to be not only an agricultural and local need, but of military value.

Olympia, Wash.—See "Bridges."

Olympia, Wash.—The state highway board has announced that it will recommend to the national highway council for approval the following highway and bridge projects now under construction. This action will be taken under the federal highway board's bulletin ruling effective Sept. 10. The continuance of these improvements will be recommended, the highway board announced, as necessary, when they shall be presented for review: Grays Harbor county—Permanent highway No. 18, overhead crossing and highway approaches thereto at Elma. King county—Permanent highway 2-J, Wayne-Juanita, concrete paving, J. W. Hoover & Co., contractors. Permanent highway 2-K, Juanita-Houghton, concrete paving, J. L. Smith, contractor. Permanent highway 11-C, Auburn-Enumclaw, concrete paving, Kaiser Paving Co., contractor; Kanasket bridge, concrete, Charles G. Huber, contractor; North Bend bridge, steel and concrete, C. C. Snyder & Co., contractors. Pierce county—Permanent highway No. 12, Pacific highway south of Tacoma, concrete paving, Tom Morgan, contractor. Snohomish county—Bridge at Silvana, steel-concrete, etc., Monson Construction Co., contractors; bridge near Island school, concrete, Reinseth & Hoversland, contractors. Spokane county—Permanent highway 3-A, Sunset highway near Deep Creek, concrete paving, Clifton-Applegate & Toole, contractors. Permanent highway 11-B, Normal highway, north of Cheney, concrete paving, C. M. Payne, contractor; Nine-mile bridge, steel and concrete, C. A. Graves, contractor. Thurston county—Pacific highway, bond road No. 1, St. Clair-Nisqually, concrete paving, R. M. Hardy, contractor; Pacific highway, permanent highway 2-D (also federal aid project No. 12), St. Clair-Lacey, concrete paving, R. M. Hardy, contractor; Nisqually River bridge, Pacific highway, concrete, Hans Pederson, contractor (work in charge of Charles G. Huber). Whitman county—Donohue law district improvement, Deming-Lawrence, concrete paving, Washington Paving Co., contractor (sub-contractor Skagit Construction Co. approved as to portion of contract southeasterly from the Nooksask bridge; Donohue law district improvement, North River road, concrete paving, K. Sauset, contractor; approved as to that portion thereof designated by county commissioners for completion during the working season of 1918; Donohue law district improvement, from north end of last-named project to Blaine, concrete paving, Liddingham & Cooper, contractor; approved as to that portion thereof designated by county commissioners for completion during working season of 1918; local improvement district, Gillespie and Fifth Sts., Blaine, concrete paving, Liddingham & Cooper, contractors; approved as to that portion thereof designated by county commissioners for completion during working season of 1918. Yakima county—Permanent highway No. 26-A, old town road, concrete paving, Yakima Glazed Cement Pipe Co., contractors; Donohue local improvement district No. 1, Riverside road, concrete paving, J. A. Gudgel, contractor; Moxee-Yakima local improvement district road (Donohue law), bitulithic concrete paving, A. L. Clark & Co., contractors. City of Bremerton—Local improvement district, Fifth and Pacific Sts., concrete paving, curbs, etc., R. H. Travis, contractor. City of Tacoma—Jefferson Ave., paving improvement (approaching completion), Puyallup Ave. paving improvements, etc. City of Seattle—Rainier Ave. local improvement district No. 3140, monolithic brick paving, Nettleton-Bruce-Eschbach Co., contractors; Rainier Ave. local improvement district No. 3145, monolithic brick paving, R. G. Stevenson, contractor; Ranier Ave. local improvement district No. 3146, monolithic brick paving, R. L. Sparger, contractor; Howard Ave. north local improvement district No. 3097, asphalt and concrete pavement, curbs, etc., V. Bressi, contractor; Utah Ave. et al. local improvement district No. 3108, brick pavement, etc., S. A. Mocori and Superior Construction Co., contractors; Gilman and 11th Ave. W. local improvement district No. 3136, concrete pavement, etc., Swenson & Co., contractors; Eastlake Ave. bridge (across Lake Union), steel and concrete, Booker-Kiehl & Whipple, contractors. State Road projects—McClellan Pass highway, Carmack bridge over Nachez River, Yakima county, steel and concrete, J. R. Wood, contractor; Federal aid project No. 5, Martins Bluff to Woodland, grading, retaining wall, etc., L. H. Guerig, contractor; Federal aid project No. 7, Creston-Wilbur, grading, concrete culverts, etc., G. L. Stickler, contractor; Riffle bridge, Cowlitz River, Lewis county, steel and concrete, Charles G. Huber, contractor; National Park highway, La Grande north, grading, concrete culverts, etc., Torger Peterson, contractor.

Seattle, Wash.—County Engineer Sam Humes has completed plans for the construction of the Boddy-Hindle road on the east side of Lake Washington and submitted same to the King county commissioners for their approval. As soon as the plans are approved bids for the construction of this road will be called for by the board. The road to be graded is 3,000 ft. long and will require the construction of an 800-ft. plank trestle and a piling dock 100x16 ft. in size on Fairwether Bay in Lake Washington. The estimated cost of the work is approximately $15,000.

Spokane, Wash.—The Trent Ave. bridge is to be paved at once. Also Trent Ave. from the west end of the bridge to Grant, 14th from Grand Blvd. to Adams and Sound from Stevens to Wall. Mayor C. M. Fassett.

Seattle, Wash.—This city contemplates filling in the entire area described below to an elevation of five-tenths (.5) feet above the permanent sewer system of said district, together with such bulkheading as may be necessary to retain such fill on private property, said improvement to be officially designated as South Seattle Sanitary Fill, to wit: Beginning at the intersection of Ninth Ave. South and Diagonal Ave.; thence southwesterly along Diagonal Ave. to Spokane St.; thence west along Spokane St. to an intersection with the right of way of the Oregon & Washington Railroad Co. through the center of block two hundred seventy-one (271) Seattle Tide Lands; thence southerly following said right of way to the intersection of Adams St. West to Fifth Ave. South; thence east along Adams St. to Seventh Ave. South; thence north along Seventh Ave. South to Dakota St.; thence east along Dakota St. to Eighth Ave. South; thence north along Eighth Ave. South to Charlestown St.; thence east along Charlestown St. to Ninth Ave. South; thence north along Ninth Ave. South to the point of beginning.

Spokane, Wash.—Resolution has been introduced in council providing for the paving of the Trent Ave. bridge; also Trent Ave., from the west end of the bridge to Grant; 14th, from Grand Blvd. to Adam, and Sound, from Stevens to Wall. It is estimated 3,500 barrels of cement will be required.

Wenatchee, Wash.—The proposition of paving the floor of the Columbia River bridge with concrete is before the Chelan county commissioners.

Ladysmith, Wis.—City intends to pave Minor Ave., from 2d St. West, from Worden Ave. to Lake Ave.

Bow Island, Alta.—The construction of cement sidewalks costing $10,000 is contemplated by the town council. S. Jamieson, clerk.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Montgomery, Ala.—*Contract awarded Simmons, Hartenstein & Whitton, Charlotte, N. C., for paving roads in Camp Sheridan; approximately $200,000; concrete, 18 and 24 ft. wide.

Clarendon, Ark.—*Roger Brittenum, Brinkley, Ark., for grading 14 miles of road in Monroe county road improvement district at 30 cts. per cu. yd.

Riverside, Cal.—*Johnson-Shea Co., P. O. Box 906, this city, for constructing oil macadam shoulders on the Box Springs road, from Gage Canal to the Santa Fe Ry., involving 1,931 tons of rock to be furnished, hauled, spread and rolled; 310 bbls. road oil, 41,345 sq. ft. of macadam to be loosened, oiled and rolled, at $9,489.

San Ardo, Cal.—*Contract was awarded to F. C. McIntire, Stockton, Cal., for grading and paving with concrete 11 miles of state highway in Monterey County between here and San Lucas; $117,268.

Stockton, Cal.—Wm. Morenig, this city, may receive the contract for improving that portion of county road known as Yosemite Ave. extending from improved road at Calla School House east to French Camp road, a total distance of 25,250 ft., also for improving that portion of the S. A. Seavy road extending from the improved road at Ripon north to county road known as Yosemite Ave., a distance of 20,655 ft.

Washington, D. C.—A contract for siding and excavation at project No. 27 A, B and C, Washington Navy Yard, has been awarded to *R. G. Collins, Munsey Bldg., Baltimore, Md. The contract is on a lump sum basis for siding and a unit price per cubic yard for the excavation.

Boise, Idaho.—Heyburn Park Comn. let contract for road construction in Heyburn Park, on shores of Lake Coeur d'Alene, to *J. W. Hastings, of Spokane, for $20,000. W. I. Bassett, of State Highway Engr.'s Dept. will supervise construction.

Aitkin, Kan.—*Kuhlman Bros., Finlayson, Minn., for constructing State Road No. 3, from N. P. Ry. right of way at Tamarack, Minn., involving the following: ½ acre grubbing, ½ acre clearing, 9,339 cu. yds. excav., 407 cu. yds. side excav., 16,800 cu. yds. overhaul, 1,075 cu. yds. concrete culverts, and 1,788 cu. yds. gravel surfacing, at $6,653.

St. Boniface, Man.—*Cusson Lumber Co., Ltd., general contract for bituminous pavements costing $110,000.

Boston, Mass.—*D'Onofro Bros. received contract for laying granite block pavement in Atlantic Ave. from S. Market to Commercial; $74,410.70.

Boston, Mass.—*Contract awarded to B. E. Grant for repairing Commercial and Causeway Sts. from Hanover to Washington St. N.; $75,569.75.

Saginaw, Mich.—*Sager & Tellick, for building District Road No. 4 in Maple Grove township. Board of Saginaw county road comrs. L. L. Pearson, chairman, Saginaw.

Chaska, Minn.—*J. J. & M. S. Mergens, 401 Kasota Bldg., Minneapolis, for grading State Road No. 2, Section 34. *Fred Abraham, New Germany, Minn. Carver county. J. B. Connolly, auditor.

Pipestone, Minn.—*Campbell Construction Co., 3050 Hennepin Ave., Minneapolis, for paving 9 blocks of street at $25,742, and *J. W. Hunt & Son, Pipestone, for curbing at $3,054. L. P. Wolfe, engr., 1000 Guardian Life Bldg., St. Paul.

St. Paul, Minn.—*Fielding & Shelley, 216 University Ave., this city, for paving Pine St., at $37,438.

Scottsbluff, Neb.—*The Cowan Construction Co., for crosswalks and alley crossings. City council. M. O. Sohns, clerk.

Wahoo, Neb.—*Central Bridge & Construction Co., this city, for 11,600 cu. yds. of earthwork, at 32½ cts. per cu. yd.

Gloucester, N. J.—*W. P. McDonald Construction Co., Mt. Vernon, N. Y., for building roads in Gloucester. State highway commissioners, Broad St. Bank Bldg., Trenton, N. J. W. G. Thompson, engr., Trenton.

Edgewater Park, N. J.—*Utility Construction Co., New Brunswick, N. J., for curbs, gutters and sidewalks, $14,000. Beverly township. Jos. J. Logan, Mt. Holly, engr.

Jersey City, N. J.—*L. R. Emmer, 150 Nesbit St., Weehawken, will pave Lincoln highway, for which he will be paid approximately $15,300, as follows: 2,500 sq. yd. wood block paving, $6 per sq. yd.; 200 sq. yd. granite block paving, $3.50; 100 cu. yd. concrete, $10; 26 cu. yd. ¾-in. stone and screenings, $4; 20 manhole heads lowered, $10 each.

Rockaway, N. J.—*Osborne & Marsellis Co., Bellevue Ave., Upper Montclair, N. J., for reconstructing road in Rockaway, $49,905.18. Board of chosen freeholders of Morris county. Winfield Hopkins, engineer, Morristown.

Utica, N. Y.—*Harry W. Roberts & Co., 60 Lansing St., this city, for the following street paving: Whitesboro from Lafayette to Vulcan Sts., $3,212; LaFayette St. from Genesee to Broadway, $9,592; Post St. from Burnet to Charlotte, at $5,-181; Raylor Ave. from Arthur St. to West Shore Ry., $10,119; State St. from Cooper to Spring St., $3,742; Court St. from State to Lincoln Ave., $2,965.

Amherst, O.—*Hill & Hill Construction Co., of Elyria, O., for improving Ridge road.

Cincinnati, O.—*Metzel & O'Hearn will resurface Third St. from Washington Ave. to Saratoga St.

Dayton, O.—*E. D. Murray, at approximately $4,500, for the paving of Ohio St. from Keowee to Valley Sts., and for the grading and gravelling of Minerva St. from Second to Third Sts., *G. R. Stottelman, approximately $2,000.

Iberia, O.—*Bruce Williams, Marion, O., for building cemetery road, 2,742 ft. stone. Board of trustees of Washington township. Grone Clements, engr., court house, Mt. Gilead.

Toronto, Ont.—*Verrocchio & Castellani, Toronto, for 10,000 yds. of excavation in Don Mills Valley, cutting down and grading Taylor's Hill.

Gaiesville, Ore.—*Contract awarded to John Hampshire Co. for grading 14 miles of Pacific Highway between here and Canyonsville; $200,000.

Portland, Ore.—The following was the only bid received for the improvement of East 29th St. from Belmont St. to East Stark St., opened at the regular meeting of the city council yesterday: Warren Construction Co. for gravel bitulithic pavement in roadway at $2 per sq. yd., $16,865.80.

Portland, Ore.—Bids were opened at the meeting of the state highway commission yesterday for the following Guy F. Pyle, of Eugene, submitted the only bid for the overhead crossing near Divide. His bid follows: 160 cu. yds. "A" concrete, $29; total, $4,756; 20,000 lbs. reinforcing steel, 9 cts. or $1,800; 128 lin. ft. hand rail, $3, $384. The Trussed Concrete Steel Co. submitted a proposal to furnish the reinforcing steel for $5.25 per 100 lbs., including bending, but not fabricating for columns.

Portland, Ore.—State highway commission received following bids for road work: Johnson Contracting Co., Lumber Exchange Bldg., clearing and grubbing, $200; common excavation, 9,350 yds. at 85 cts., $794.50; 3,100 yds. intermediate excavation at 90 cts., $2,790; solid rock, $1.50 per yd., $4,650; overhaul, 18,000 cu. yds. per 100 ft., at 5 cts., $900; 5 yds. concrete "C," at $35, $175; 108 ft. 18-in. concrete pipe at $2.25, $243; 110 ft. 24-in. concrete pipe at $3, $330; 800 lin. ft. guard rail at 80 cts., $640. The total of this bid is $17,875.50.

Bethlehem, Pa.—*Seguine & Co., of Portland; *Hazen Sand Co., of Bangor, and the *Wash Sand & Gravel Co., of East Bangor, a share for furnishing and delivering crushed stone, gravel or slag on the Bethlehem-Nazareth road, f. o. b. Brodhead Station. All idential, being $150 plus a war tax. The county commissioners at the court house at Easton.

Beauharnois and St. Annes, Que.—*Quinlan & Robertson, Ltd., 260 St. James St., Montreal, general contract for Tarvia pavements, $40,000. Town councils.

Seattle, Wash.—*W. H. Smith will lay a concrete sidewalk on Fourth Ave. W.

Seattle, Wash.—*R. G. Stevenson will lay a concrete sidewalk on Sixth Ave. N.; *Nettleton-Bruce-Eschbach Co. will pave Ranner Ave.

Seattle, Wash.—Yale Ave. N. et al., improvement by concrete walks; contract was awarded to *Fiorito Bros. on bid of $5,841.

Seattle, Wash.—Bay St. improvement by paving was awarded to *James Constr. Co. on bid of $5,048.

Seattle, Wash.—W. Spokane St. bridge approach on east side; contract was awarded to *Hansen & Hange on bid of $21,548.90.

SEWERAGE.

Birmingham, Ala.—Sealed bids will be received by the undersigned for the construction of a plant for the disposal of sewerage. Blue prints, plans and specifications can be seen at room 29, city hall. The right to reject all bids is reserved. D. E. McKinley, purchasing agent.

Washington, D. C.—See "Miscellaneous."

Dubuque, Ia.—This city will build a sewer to prevent the overflow of the Kaufman Ave. water level.

East St. Louis, Ill.—Cahokia Creek may be converted into a sewer.

St. Landry Parish, La. (P. O. Opelousa).—Second Ward sewer bonds will be sold; $45,000.

Springfield, Mass.—The building of a sewer on Blaine St. at a cost of $275 and another on Porter Ave. to cost $375 is contemplated.

Battle Creek, Mich.—This city will instill a sewer in Hubbard St., from Van Buren St. to near Main St. The estimated cost is $600. R. H. Kernen, commissioner.

Detroit, Mich.—Following notification by the capital issues committee that federal aproval is unnecessary for bond issues under $100,000, the Highland Park council has ordered that steps be taken immediately for the construction of additional sewers, bonds for which, to the amount of $80,000, were authorized at a special election a few months ago. The city engineer has been instructed to prepare plans for a trunk sewer extending from Woodward Ave. to Hamilton Blvd., designed to relieve the congestion in the chief drainage line. Lateral sewers to Oakland Ave. will be connected with the trunk drains, and are expected to eliminate the drainage difficulties of the southern district of the city. Bids for the disposal of the bonds will be opened September 30.

Highland Park, Mich.—City Clerk Delmer C. Gowing receiving bids Sept. 30 for an issue sewer bonds, $80,000.

Duluth, Minn.—City may build a sanitary sewer in 8th St. from 40th Ave. W. to connect with sewer in 39th Ave. W., at $1,553.

Duluth, Minn.—This city intends to construct a sanitary sewer in the Boulevard from 13th St. to south line of Homewood Park addition to the sewer in Sixth Ave. East. Cost, $1,210.55.

St. Paul, Minn.—The city will do the following sanitary work: Sewer construction on Lombard Ave. from westerly termination of said sewer where the same now ends between said street and Ridgewood Ave. to a point on said Lombard Ave. at the summit of the hill between said Ridgewood Ave. and Lexington Ave.; a sewer in Sherburne Ave. from Griggs St. to Hamline Ave.; a sewer on Tatum Ave. from Chelton Ave. to Tallula Ave.; a sewer on Acker St. from Buffalo St. to Mississippi St.; a sewer on Lawson St. from Arkwright St. to DeSoto St.; a sewer on Wayzata St. from Rice St. to a point 130 feet west of the west line of Park Ave.; a sewer on Brown Ave. from Winifred St. northerly to a point 5 feet north of the south line of Lot 5, Paulson's Rearrangement of the north ½ of lots 1 and 2, block 13, Brown & Jackson's Addition, thence westerly on a line parallel with and distant 5 feet north of the south line of the said lot 5, Paulsen's Rearragement of north ½ of lots 1 and 2, block 13, Brown & Jackson's Addition, a distance of 90 feet, more or less.

Newark, N. J.—City contemplates work on the Dayton St. sewer.

Trenton, N. J.—Several municipalities object to construction of proposed intercepting or trunk sewer disposal plant for Boonton, Dover and other municipalities in Rockaway watershed.

Carthage, N. Y.—Citizens voted Sept. 4 in favor of issuing $7.500 sewer bonds.

Salamanca, N. Y.—Bids received Oct. 7 for the following bonds: Sewer, $22,830; highway imp. assmt., $9,230; highway imp., city's portion, $7,845. Geo. H. Elliott, city clerk.

Cincinnati, O.—This city will improve Earnshaw Ave. from Burnet Ave. to a point 230 ft. east of Burnet Ave. by constructing concrete curb and the necessary drains, inlets and retaining wall, paving the roadway with brick and installing the necessary additions to the existing water main.

Lima, O.—City plans a system of sewerage for part of the city of Lima, to be known as Collett relief sewer subdivision of the North Lima sewer district.

Lima, O.—Orders to proceed at once with the construction of the new Collett St. relief sewer were issued by council in passing legislation authorizing the improvement.

Mansfield, O.—C. H. H. Rhoads, city auditor, will receive sealed bids Sept. 30 for bonds as follows: $5,000 5% sanitary sewer, dated Sept. 1, 1918, maturing $2,000 in 1 year, $1,500 in 2 and 3 years; $550 6% sanitary sewer, dated Sept. 1, 1918, maturing $300 in 1 year, $150 in 2 years, and $100 in 3 years; $4,700 5% sanitary sewer, dated Sept. 1, 1918, maturing $2,000 in 1 year, $2,000 in 2 years and $700 in 3 years. Bonds bear interest per annum, payable semi-annually. All bids must be accompanied by a certified check for 2% of bonds bid for.

Sandusky, O.—City will receive bids soon for the construction of a sewer along Sycamore Line and Lane and Wayne St.

Toledo, O.—This city will continue preliminary work on Toledo's elaborate intercepting sewer system.

Duncan, Okla.—See "Water Supply."

Guelph, Ont.—A new drainage system may be installed in St. Patrick's Ward. Sanitary inspector, Mr. Merewether.

Hamilton, Ont.—The construction of sewerage system costing $70,000 is contemplated by the McKittrick Syndicate, Bank of Hamilton Bldg. Engineer, E. R. Gray.

Lindsay, Ont.—The construction of sewers on Cambridge St. is under contemplation. Mr. Kylie, mayor.

Austin, Tex.—City will install $100,000 sewage disposal plant.

Temple, Tex.—Sewer plant will be enlarged and new material for this purpose will have to be bought by city.

Reedsburg, Wis.—The issuance of sewer bonds, $20,000, has been authorized by the common council.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Greenwich, Conn.—*Pioneer Contracting Co., 40 N. Main St., New Rochelle, N. Y., at $3,000, for installing sewer. Sewer commissioners.

Waterbury, Conn.—*Salvatore De Simone, 96 S. Main St., for building sewers in Walnut St. extension from Farm to Division St. Board of public works. R. A. Cairns, city engr., city hall.

Danielsville, Ga.—Contract given to *Siguen, Reinhart & Rutledge for construction of 7¼ miles of ditch, entailing 170,000 cu. yd. excavation in Brushy Creek drainage district.

Cedar Rapids, Ia.—*W. A. Edgar, 310 Tenth Ave., for installing sewer. City council. T. F. McCauley, engineer, City Hall.

Davenport, Ia.—The Independent Construction Co. was low bidder on the construction of a storm drain and sewer along Schmidt's road.

Rockford, Ill.—*G. W. Mulholland, 1227 Camp Ave., for installing sewer in Court St. Board of local improvements. R. Rew, president, city hall.

Indianapolis, Ind.—*American Construction Co., this city, for improvements of main sewer along Sherman Drive and 38th St.; at $4.85 per cu. yd.

Ironton, Minn.—*Pastoret Construction Co., Duluth, Minn., at $5,200, for sanitary sewers. Village council. Thos. Grimsted, clerk.

Clarksdale, Miss.—*Olivet & DuComb, of Maircieu, are going to construct about 7 miles of drainage, entailing 140,000 cu. yd. excavation, in Bolivar and Coahoma counties; about $25,000.

Binghamton, N. Y.—*George Serafini, 10 Fayette St., for installing sewers at $6,245.57. Board of contract and supply. H. W. Strong, secy., city hall. W. E. Weller, engr., city hall.

Woodhaven, N. Y.—Bids just received by Borough President Connolly for the construction of a combined sanitary flow and storm water sewers in Genesee St., show the Ajax Drainage Contracting Corp. to be the lowest-priced contractors for the standard type of sewer, with a figure of $468,654.20. The Suburban Contracting Co. is the lowest bidder for concrete construction, asking $463,334. This is the second time bids have been received on this contract. The first were received a month ago, when Anthony Ferris, with a price of $376,000, was the lowest bidder on each kind of construction. Because of technical errors in the way Ferris made out his bid sheets all proposals had to be rejected. Ferris did not submit bids at this time.

Marion, O.—Contract for storm and sanitary sewers in Cheney Ave. was given to *Marion Osgood Co.; Olis St. sewer contract given to *Commercial Steel Castings Co. Tom Cathers, engineer, Masonic Bldg.

Stamford, Ont.—*Andrew Fisher, for sewers on Fifth St. Mr. Walters, councillor.

Mobridge, S. Dak.—*Schruth & Jackson, Fargo, N. D., for constructing sewerage system at $48,725.

WATER SUPPLY.

Summerland, B. C.—The town council contemplates extension to waterworks at a cost of $30,000. Mr. Johnston, councillor.

Denver, Colo.—This city contemplates issuing $13,970,000 for water bonds.

Washington, D. C.—See "Miscellaneous."

Atlanta, Ga.—Three bids for furnishing pumps to be installed at municipal water works plant were considered and

rejected temporarily, it being stated that they were not in accord with the specifications. W. Zoda Smith, supt. of city water works.

Camp Dodge, Ia.—Water works will be neded by the government buildings at Camp Dodge and Rock Island.

Sioux City, Ia.—A new 250,000-gal. reservoir is to be built on one of the hills east of the new Milwaukee roundhouse.

Peru, Kan.—City contemplates to spend $25,000 in water works and electric improvements. Engineers, Archer & Stevens, 609 New England Bldg., Kansas City, Mo. Fred Mallonee, city clerk.

Stithton, Ky.—Government will spend $15,000,000 in water works and other improvements at local cantonment.

Salem, Mass.—City council passed an ordinance authorizing the issuance of $20,000 bonds for the electrification of the city's waterworks plant.

Bemidji, Minn.—A new water system will be installed here.

Bernardsville, N. J.—Clyde Potts, civil and sanitary engineer, 30 Church St., New York City, is to be consulting engineer who will prepare valuation of local water works. Mr. Potts will also submit plans for their reconstruction.

Pedrickton, N. J.—The ordnance station will have its water mains extended.

Wildwood, N. J.—Director of Revenue and Finance R. W. Ryan receiving bids Oct. 3 for an issue water coupon or registered bonds, $35,000.

Fort Terry, N. Y.—Fort Terry and Fort Wright will get two new power plants and laundry buildings to cost $300,000 each. Advisory engineer, Col. F. M. Gunby, Washington, D. C.

North Hempstead, N. Y. (P. O. Manhasset).—Water improvement bonds will be sold; $25,000, 5 per cent, 1-20 years.

North Tonawanda, N. Y.—Water improvement bonds, $80,000, will be submitted by the city council to the capital issues committee for approval.

Mechanicville, N. Y.—This town contemplates installation of a water supply system; $100,000. Engineer, C. E. Hicks.

Watervliet, N. Y.—Board of aldermen are considering additions and improvements to the French Mill water supply. Cost, about $130,000.

Durham, N. C.—City sold water bonds, $100,000, to local banks at par. Geo. W. Woodward, city clerk.

Bradford, O.—Durfee, Niles & Co., of Toledo, were the successful bidders for an issue water improvement bonds, $1,-100. Bonds offered Aug. 2.

Springfield, O.—Hazen, Whipple & Fuller, consulting engineers, New York City, have drawn plans for increase of municipal water supply, to consist of dams to be placed in Buck creek and its tributaries.

Youngstown, O.—The city water system may have to be improved.

Duncan, Okla.—City has sold the following bonds authorized at an election Sept. 2, to George J. Gilbert, of Oklahoma City, at par: Water extension, $50,000; electric light, $30,000; sewer extension, $15,000. C. W. Towler, city clerk.

Pendleton, Ore.—Water extension bonds, $20,000, will be voted on at an election Nov. 5.

Dundas, Ont.—Waterworks extension bonds, $27,000, was voted at an election here.

Wilkesport, Ont.—The Sombra township council has passed a bylaw authorizing the construction of drains costing $20,000. Clerk, W. A. Scott. Wilkesport.

San Angelo, Tex.—A modern filtration plant will be installed by the San Angelo Water, Light & Power Co.; $85,000 will be spent on improvements.

Saltville, Va.—Water works will be needed for the new government plant.

Seattle, Wash.—Twelfth Ave. will be improved from East Roy St. to East Prospect St. by the laying of water mains.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Martinez, Cal.—*Mr. Murphy, 1321 Melvia St., Berkeley, has a $75,000 contract from city for building a distributing system consisting of 6,540 ft. 12-in., 8,150 ft. 6-in. and 20,200 ft. 4-in. class "A" c. i. pipe; 8,470 ft. 2-in. screw pipe, ten 12-in., twelve 6-in., forty-nine 4-in. and sixty-eight 2-in. gate valves; 50 ft. steel standpipe, 24 in diameter, and relaying 6,900 ft. 3, 4 and 6-in. screw pipe. *R. O'Halley, San Francisco, has a $27,030 and a $2,650 contract for building a 1,500,000-gal. reinforced concrete reservoir and 18x24 ft. reinforced concrete pump house. *Fairbanks-Morse Co., 691 Mission St., San Francisco, has a $6,014 contract for the installation of two triplex single-acting pumps with 270 gal. per minute capacity.

Putnam, Conn.—Low bids received by board of water commissioners for laying 9,600 ft. 16-in. c. i. water pipe, consisting of 4,250 cu. yd. excavation. Bidders were G. A. Hawkins, 23 Sunnyside Ave., G. H. Gilpatric, Seward St., H. J. Smith, 110 Church St.

Akron, O.—Low bids received by P. G. Hoffman, director public service, for laying 5,200 lin. ft. 6-in., 6,200 lin. ft. 8-in. and 300 ft. of 4, 10 and 12-in. c. i. water pipes; contract 108. Bidders were Gessner Co., 616 Nicholas Bldg., Toledo, $18,360; T. E. McSchaffrey Constr. Co., 175 South Forge St., $20,955.

Geary, Okla.—*W. H. Reynolds will improve water works system; approximately $6,200. This includes well and distribution pipes.

Argyle, Minn.—*Capital Trust Co., St. Paul, successful bidder at par for waterworks bonds; $42,000, 5½ per cent, 15 years.

Wolsey, S. Dak.—*J. H. Janssen, Woonsocket, S. D., for an artesian well work including $4.40 for the 200 ft. to be piped with 6-in. X heavy pipe; $3.30 for the remainder of the well to be piped with 4-in. heavy pipe.

Seattle, Wash.—*Joe Di Julio Co. will lay a water main on Twelfth Ave. N.

LIGHTING AND POWER.

Fort Payne, Ala.—A bond issue of $14,-000 was voted for a municipal light plant. Thos. Sawyer, mayor.

Los Angeles, Cal.—Bids will be solicited to furnish transformers for harbor district and second power plant in San Francisquito canyon. New plant will cost $1,400,000 and will be paid for out of earnings of municipal power. Site and tunnels connecting it with Municipal Power Plant No. 1 are ready for actual construction work on plant to be started, and all that is necessary is to purchase equipment to begin building.

San Francisco, Cal.—A new electrical power plant, developing 25,000 theoretical horse-power is to be established on the Middle Fork of the Feather River, Plumas county, by K. E. Enslow, of San Francisco; Richard Day and Adams Pipe Works, of Los Angeles, who propose to store 50,000 acre feet a year in Gold Lake and Grizzly Valley, Sierra county, according to application for water rights to the state water commission. The same people have applied for 250 cu. ft. a second of the waters of the Middle Fork of the Feather River for the irrigation of 85,320 acres. The main canal will be 20 miles in length; 60,000 acre feet a year will be stored in Gold Lake. The works will cost $50,000.

Washington, D. C.—See "Miscellaneous."

Maquoketa, Ia.—This city will vote on a $65,000 bond issue for municipal lighting plant. W. C. Morden, mayor.

Palmer, Ia.—$7,000 will be spent in transmission lines. Details from village clerk.

Bradford, Ill.—This city wants to issue $10,000 in electric light bonds. J. R. Blaisdell, village clerk.

Decatur, Ill.—The water at the contemplated dam at Kankakee will be used for generating power.

Chanute, Kan.—The electric light plant will be enlarged.

Milan, Mo.—This town will have to have a new electric light plant. Its old one was destroyed by fire. Village clerk.

Dover, N. J.—New electric pumping machinery at the municipal waterworks will be installed to increase capacity of plant.

Buffalo, N. Y.—City council intends to contract with Buffalo General Electric Co. for a new street lighting arrangement for duration of war, or until July 1, 1921.

Fargo, N. D.—An electric power and light plant will be erected by this state at the state university. Rose & Harris, Auditorium bldg.

Norwalk, O.—City will issue $25,000 in bonds to buy a 500-k.w. generator for the municipal power plant. City manager, W. C. Mack.

Savannah, O.—John Gibson, village clerk, calls for bids Oct. 3 for an issue $5,000 electric light bonds.

Duncan, Okla.—See "Water Supply."

Barton Township, Ont.—The township council passed a by-law, authorizing the issue of $55.000 debentures for the installation of a hydro-electric lighting system.

Nottawa, Ont.—The extension of electric system from Collingwood to serve Nottawa is under contemplation. Superintendent, Mr. Stapleton, Collingwood.

Ontario, Ore.—Town may build lateral sewer to connect with sewer No. 2 on west side of tracks.

Philadelphia, Pa.—A new steam driven electric generating station at the Hog Island shipbuilding works may be installed by Emergency Fleet Corporation for plant operation.

Brownsville, Tex.—The electric light system will be extended. Details from mayor.

Seattle, Wash.—Bonds will be sold for hydro-electric plant; $1,500,000.

Barron, Wis.—Electrical equipment will be purchased for dam to be constructed by the city. Engineer J. C. Jacobson, First National-Zoo Line Bldg., Minneapolis, Minn., has prepared estimates for dam.

Broadhead, Wis.—For the improvements to the electric light plant, the Power Engineering Co., Corn Exchange Bldg., Minneapolis, has prepared estimates. K. Guelson, supt. of municipal light plant.

Ladysmith, Wis.—This city may establish a white way on Minor Ave. from Second St. west from Worden Ave. to Lake Ave.

Milwaukee, Wis.—City is issuing lighting bonds, $250,000, 5 per cent.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Washington, D. C.—*Johansen & Kiernan, Norfolk, Va., will build a new power plant at St. Julians, Va., for the government. Cost without equipment, $13,000.

Des Moines, Ia.—*Chicago Concrete Post Co. for 160 concrete electroliers for the capitol extension grounds, $15,000; includes the lamps and globes and the installation of all of the electroliers, by the state executive council.

Duluth, Minn.—*Contract for the installation of ornamental lights on North Tower Ave. from 8th to 3d Sts. has been awarded by the city commissioners to the Kelly Construction Co. of Chippewa Falls, which submitted the lowest bid. This company has undertaken to do the work for $7,797, or nearly $6,000 less than the amount asked by its nearest competitor, a Superior concern.

Columbia, S. C.—*Tucker & Laxton, Charleston, N. C., for about $300,000, for electrical construction at Field Artillery Replacement depot at Camp Jackson, which will be erected at cost of approximately $11,000,000.

FIRE EQUIPMENT.

Birmingham, Ala.—Upon the recommendation of Commissioner of Public Safety John H. Taylor, the city commission has agreed to appropriate $10,000 for the purchase of a pumping engine for the Wylam fire department, the engine to serve the Wylam, Ensley and Pratt City territory. The engine is a triple combination pumping engine, chemical engine and hose car, with a capacity of 600 gallons, six cylinders and is of 100 horse-power.

Atwater, Cal.—A fire department has been established here.

Delano, Cal.—500 ft. of fire hose will be bough by town and perhaps a truck, too.

Lynn, Mass.—The Pine Hill district is without fire protection.

Natick, Mass.—$8,000 will be spent for a first-class triple combination, and $2,-000 for the motorizing a truck.

Alma, Mich.—C. E. Gallagher, clerk of council, announces construction of new fire station. It will be 2 stories high, 40x60 ft. in dimensions.

Grand Haven, Mich.—A $4,000 bond issue will pay for a motor fire truck.

Breckinridge, Minn.—This city is in the market for fire hose.

Duluth, Minn.—This city will soon purchase automobile tires for the fire department and make repairs to Duluth Heights fire hall.

Alda, Neb.—This town needs fire protection.

Glen Erie, N. Y.—This town has no fire system.

Ripley, N. Y.—This town has come to the conclusion that it needs adequate fire protection. It hasn't any as yet.

Rotterdam Junction, N. Y.—Town needs fire equipment.

Taleville, N. Y.—This town has no fire protection.

Bellevue, O.—City sold to John Nuveen & Co., of Chicago, fire department bonds, $12,000. G. R. Moore, city auditor.

East Liverpool, O.—A fire station will be re-established in the west end.

Fremont, O.—Safety Director Baker made request for purchase of automobile truck for use in fire department. Matter is under consideration.

Urbana, O.—Fire Dept. bonds will be sold; $15,000, 5½ per cent, denomination $500.

Muskogee, Okla.—It is intended to spend $75,000 in fire equipment.

Ranger, Tex.—This town may soon install a fire system.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Newport, R. I.—Under the resolution to supply the fire department with equipment for the ensuing four months, the successful bidders were the *William B. Scott Co., *Newport Auto Supply Co., *Newport Rubber Co., *Broadway Hardware Co., *William Leys & Co., *William H. Tibbetts, *Hess & Co., *King & McLeod and the *Peckham Co. The matter of automobile tubes and tires was withdrawn and held over for further investigation, as the bid seemed low.

BRIDGES.

Oroville, Cal.—The board of supervisors has agreed to proceed immediately with the construction of the bridge across the Feather River upon the Oroville lateral.

Darien, Ga.—See "Streets and Roads."

Caldwell, Ida.—Canyon county voted Sept. 3 in favor of issuing $70,000 bridge bonds.

Waterloo, Ia.—Owing to the governmental order limiting all kind of construction to war work and urgent local necessities, bids for a bond issue of $24,000 to refund bridge warrants may not be called.

Decatur, Ill.—One new bridge in each of the three townships, Whitmore, Niantic and Blue Mound, were authorized by the board.

Decatur, Ill.—This city will construct a safe crossing in East Decatur.

Baltimore, Md.—See " Streets and Roads."

Livingston, Mont.—Park county will vote Nov. 5 on the question of issuing $50,000 bridge bonds. Chas. A. Bing, county clerk.

Atlantic City, N. J.—Freeholders here are obliged to draw up a new contract for Bungalow Park bridge owing to war conditions.

Arlington, N. Y.—C. R. Cornwell, superintendent of highways of Dutchess county, rejected bids received for concrete arch bridge over Wappingers creek, between Poughkeepsie and La Grange.

Rochester, N. Y.—New bridge may take the place of old float bridge; cost about $20,000. Another bridge may also be put in place of one on Rochester-Scottsville Road over Black Creek; about $10,943.

Wappinger Falls, N. Y.—All bids were rejected for building a bridge between this town and East Fishkill, N. Y. Fred B. Saunders, clerk.

Cincinnati, O.—At the meeting of the board of county commissioners a communication from the state highway commission was read granting the use to the board of $23,115.76 to be taken from the inter-county highway fund for the purpose of constructing a new concrete bridge over Dry Fork Creek. This amount will be forthcoming as a whole or such part as is necessary to defray one-half the cost of the new bridge.

Dayton, O.—See "Streets and Roads."

Mayfield, Pa.—Borough will shortly take new bids for concrete bridge at Poplar St. Steve Chakofsky, secretary, Mayfield. Benj. Anthony, engineer, 123 Washington St., Carbondale, Pa.

Portland, Ore.—Low bidder for building bridges on Three Rivers Road project in Sinslaw-National Forest was Curtis Gardner, $13,368.

Pittsburgh, Pa.—16th St. bridge over the Allegheny river will be reconstructed if government gives consent.

Sunbury, Pa.—Bids will be asked about Oct. 15 for bridge over Chillisquague creek, Northumberland county. J. C. Fressler, com. clerk, Court House, Sunbury, N. J. M. J. Flynn, engineer, 4th and Oak Sts., Mt. Carmel, Pa.

Salt Lake City, Utah.—Road and bridge building is contemplated.

Richmond, Va. — For construction bridge over N. Anna river, between Hanover and Caroline counties. State highway commissioners. G. P. Coleman, commissioner, will ask new bids later on; $30,000.

Aberdeen, Wash.—Council has declared an emergency to exist and has passed ordinance calling for redecking of span and reconstruction of approaches to A. J. West bridge across Chehalis River, and redecking of span and reconstruction of approaches to Heron St. bridge.

Chehalis, Wash.—Lewis County Comrs. have instructed County Engr. to prepare plans and specifications for retimbering present 142-ft. span over Cowlitz River near Harmony, known as Bridge No. 21; also to prepare plans for new 136-ft. steel arch bridge for same location. Comrs. have called for bids for raising of steel bridge and building of concrete abutment on Davis Lake Road over Kildon River near Morton.

Everett, Wash.—Work on the new Sprague Slough bridge at Sultan will be started by the Everett Construction Co., which has the contract for erection of the 180-ft. steel span being built by the county. Bridge will cost $16,000.

Olympia, Wash.—State highway commission voted to complete the new Nisqually bridge on the Pacific highway.

Olympia, Wash.—See "Roads and Streets."

Olympia, Wash.—The state highway commission has taken up the matter of the new Nisqually bridge on the Pacific highway, an overhead crossing at Elma.

Milwaukee, Wis.—City Engineer Stahl will be asked to make a report on the State St. bridge question and to furnish the city plans of how the bridge is to be built. There has been an appropriation provided by the city of $250,000 for the bridge and it is a question which has been pending before the council for several years. The bonds for the construction have already been issued.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Vancouver, B. C.—*Wm. Greenless, 407 Cordova St., West, for the construction of a 120-ft. wooden span and 929 ft. of trestle extending the Fraser Ave. bridge work from Twigg Island to Lulu Island.

Salina, Kan.—*D. W. Norton, for building four bridges; *Ahlsteadt & Lindgren for two, both contractors of Salina, and one to *Erickson Construction Co., Lindsburg, Kan., Salina county. A. C. Henderson, clerk.

Boston, Mass.—*West Roxbury Trap Rock Co. given contract to rebuild Belgrade Ave. bridge, West Roxbury; $43,500.

Boston, Mass.—*M. S. Kelliher received contract for repairing floor of Broadway bridge over N. Y., N. H. & H. RR.; $7,647.75.

Lansing, Mich.—*Ross & Williams, Beaverton, Mich., for constructing state trunk line bridges Nos. 96 and 95 in Standrich township, Arenac county. State highway commission, Frank E. Rogers, chairman.

Port Huron, Mich.—*Julius Kaumier, for creosoted block bridge paving at 7th St. bridge, at $5,000. City council, Loran C. Elliott, clerk.

Toley, Minn.—*Wm. S. Hewett, 741 Metropolitan Bank Bldg., Minneapolis, Minn., at $10,450, for bridge at mouth of Little Rock Creek, Benton county. J. E. Kasner, auditor.

Kansas City, Mo.—*Jas. G. Glennon, 209 Mass Bldg., at $5,000, for rebuilding bridge at 50th St. and Blue River. Dept. of public works. Frank E. McCabe, secretary. Curtis Hill, engr.

Beatrice, Neb.—*Contract for constructing concrete arch bridge complete, including excavation, given to McColery & Atwater, Beatrice.

Ottawa, Ont.—*Foundation Co., Ltd., Bank of Ottawa Bldg., Montreal, general contract for repairs to Prince of Wales bridge and piers costing $15,000 for the C. P. Ry. Co.

Chehalis, Wash.—The county commissioners have awarded to *Charles G. Hughes, of Seattle, the contract for building a new concrete pier and straightening and raising the steel bridge across the Tildon river near Morton, for $7,897. Other bidders were John Ward, of Centralia, $8,540, and the Coast Bridge Co., of Portland, $8,800.

Seattle, Wash.—A contract was awarded Friday by the Lewis county commissioners to *Charles G. Huber, Central Bldg., of Seattle, for a new concrete pier and strengthening and raising the steel bridge across the Tildon River, near Morton, at a price of $7,897.

Sheboygan, Wis.—A combination pump and chemical engine is needed in this town.

MISCELLANEOUS.

Harrisburg, Ark.—*Contract was given to McWilliams Southern Dredging Co., Exchange Bldg., Memphis, Tenn., to build 24 miles of ditches included in Contracts 1, 2, 3, 4 and 5 of Section 1, to consist of 3,553,275 cu. yds. excavation, in Drainage District No. 7, Poinsett County.

Stockton, Cal.—Citizens in the Delta Farms Reclamation District voted a bond issue of $560,000 for the construction of 13 miles of levees and other reclamation work.

Stockton, Cal.—Delta Farms Reclamation District, at bond election, voted to levy $560,000 bond issue for purpose of constructing 13 miles of levees, purchase rights of way, purchase pumping plants and to construct canals in district. Land was reclaimed 3 years ago. Voting of bond issue provides money for purchase of reclamation improvements and rights from owners of land by reclamation district they have formed. District comprises 5,600 acres of lands on Bacon Island, owners of land on island being California Delta Farms Co., Geo. A. Atherton, Geo. M. Burton and J. C. McCarty.

Washington, D. C. (Bureau of Foreign and Domestic Commerce, Department of Commerce)—A firm in Brazil desires to secure agencies for the sale of machinery and accessories of all kinds for the manufacture of rubber goods, materials for designing, construction work, railways, waterworks, sewers, electric illumination, pavement, irrigation, street cars, automobiles, supplies for naval and military forces, etc.; agricultural machinery, smelting plants, etc., construction materials of all kinds, metal products, incinerators for garbage, electrical supplies, cement. Correspondence may be in English. References. Refer to opportunity No. 27487.

Rome, Ga.—Floyd county has indefinitely postponed the election which was called for Sept. 11 to vote on missing $100,000 jail bonds.

Dubuque Co., Ia.—Public notice is hereby given that the board of supervisors of Dubuque county, Iowa, will receive bids at two o'clock P. M. on the 10th day of September, 1918, for the purchase of $301,567.92 funding bonds of said county for the purpose of retiring general county fund warrants amounting to $136,263.53, county bridge fund warrants amounting to $87,998.19 and county road fund warrants amounting to $77,306.20.

Waterloo, Ia.—George M. Bechtel & Co., Davenport, the successful bidder for county $24,000 funding bonds.

Ft. Wayne, Ind.—City is issuing 30-yr. park bonds; $90,000; 4½ per cent.

Monticello, Ind.—Bids received Oct. 3, 1918, at 10 a. m., by treasurer of White county, for sale $5,505.50 ditch bonds, 5 per cent., six years. Frank McCuaig, treasurer.

Linton, Ind.—By city clerk for sale $20,000 bonds, 6%, 10 years. Cletus Gill.

Washington, Ind.—Bids received Oct. 15, 1918, at 10 a. m., by treasurer of Daviess county, for sale $5,200 drainage bonds, 5 per cent., ten years. Jacob G. Clark, treasurer.

St. Paul, Minn.—The city contract committee met yesterday to receive bids for some twenty improvements. They consisted largely of small grading, curbing and sewer jobs, but the absence of bids was the most conspicuous feature. Out of the number for which bids had been asked only about two-thirds attracted any bids at all, while virtually all who bid were so far above the estimate of the city engineers that the bids will not be considered. In only one or two instances were the bids within the estimate and all semblance of competition was absent.

Corinth, Miss.—$15,000 of funding warrants of Alcorn county were bought by Wm. R. Compton Co., St. Louis.

Jackson, Miss.—Citizens will vote Nov. 5 on issuing refunding bonds, $90,000.

Rincon, N. Mex.—Low bidder for construction of canal on Rio Grande project was Lee Moor Contracting Co., 30c per cu. yd.

Yazoo City, Miss.—City Clerk E. G. Olden calls for bids Oct. 14 for improvement coupon bonds, $23,000.

Washington, D. C.—General Staff orders for transformation of Camp McClellan, Anniston, Ala., into a wooden cantonment at cost of $4,500,000 have been issued and approved by the War Dept. Work will start at once.

Macon, Ga.—City has sold following bonds: Auditorium, $55,000; hospital, $75,000; park buildings, $15,000, to Citizens' & Southern Bank, of Macon. David Jones, City Clk.

Logansport, Ind.—J. F. Wild & Co., of Indianapolis, were successful bidders for issue funding bonds, $100,000. C. F. McGreevey, City Comptroller.

Baltimore, Md.—Additional waterfront developments are contemplated by city of Baltimore, $400,000 being available. Plans involve purchase of Bridge View and Mud Islands, in Patapsco River, and improvements preliminary to construction of piers and docks for industrial development.

Springfield, Mass.—Gov. McCall and Executive Council accepted offer of Federal Government for purchase of Boston dry dock and adjacent land for use of Navy Dept. Naval officials plan to erect machine shops and other buildings and to make dock and its surroundings a repair station for both naval and merchant ships. Government will pay only actual cost to state, which is about $4,100,000. Under agreement with Navy Dept. state will complete construction of dry dock and it is expected it will be ready for use by Jan. 1. It will be 1,200 ft. long and 400 ft. wide. Its construction was started nearly two years ago.

Elmira, N. Y.—A municipal garbage disposal plant may be erected.

Rockaway, L. I., N. Y.—Bids for a new hydro cylinder house at local government station are taken by the bureau of yards and docks, Washington, D. C., C. W. Parks, chief.

Beaufort, N. C.—Carteret county receiving bids Oct. 7 for the following bonds: Beaufort township, $10,000; Harlowe township, $3,000. Clerk county commissioners, J. T. Morris.

Charlotte, N. C.—This city will sell to highest bidder three bonds or promissory notes amounting to $30,000 each; 6 per cent. interest, payable semi-annually, 1-3 years; no bids received under par.

Cincinnati, O.—Bonds to be sold Sept. 17 for court house and jail, $500,000, 5%, 30 years. Albert Feinhardt, clerk county commissioners, P. O. Cincinnati.

Cincinnati, O.—Hamilton county receiving bids Sept. 17 for an issue $500,000 county bonds, proceeds for the completion of the building of a new court house. Albert Reinhardt, clerk.

Cincinnati, O.—Hamilton County $500,000 court house and jail bonds were purchased by Field, Richards & Co., Cincinnati, A. B. Leach & Co. and R. M. Grant & Co., of New York. Albert Reinhardt, Clk. County Comrs.

Cleveland, O.—Contemplates establishment of a rapid transit system consisting of subways, elevated railways, etc.

Dayton, O.—City intends to issue bonds amounting to $285,000, to supply deficiency in city revenues.

Fostoria, O.—Bonds will be issued, Sept. 16, for refunding coupon, $26,734, 6 per cent., 7 years.

Germantown, O.—Will sell bonds to supply deficiency in revenue; $17,000; 5½ per cent.; 1-14 years.

Sandusky, O.—American Banking & Trust Co., of Sandusky, successful bidder for an issue Erie county $2,400 bonds for the construction of a display at the county fair grounds.

Xenia, O.—Harper-Pitstick drain will be deepened and widened in Ross and Cedarville townships, a distance of about six miles. Cost, about $17,000.

Wauseon, O.—Village will take bids Oct. 14 for an issue city hall bonds, $5,000. Jas. C. King, village clerk.

Madras, Ore.—North Unit Irrigation Dist., secretary board directors, A. D. Anderson, will take bids Oct. 5 for 6% 6¼-year irrigation bonds, $50,000. Bonds are part of an authorized issue of $5,000,000 voted at an election in October, 1917.

Portland, Ore.—Proposals will be received by the commissioner of public docks of the city of Portland at their office, foot of Stark St., until Sept. 12 at 2 p. m., for the whole or any part of $1,000,000 of municipal grain elevator bonds of the city of Portland, series two, in denominations of $1,000 each and bearing interest at the rate of 4½%. Thirty-five thousand dollars of these bonds shall mature on Oct. 1, 1921, and on the first day of October each year until and including the first day of October, 1944, there shall mature $35,000 of these bonds and thereafter each year on the 1st day of October until Oct. 1, 1948, there shall mature $40,000 of these bonds. Principal and interest payable at the office of the treasurer of the city of Portland or at the office of the fiscal agent of said city of Portland in the city of New York. These bonds have the approval of the Capital Issues Committee.

Philadelphia, Pa.—Bureau yards and docks, navy dept., Washington, D. C., plans to spend about $7,500 to install in lumber storage automatic sprinkler system. Spec. 3384.

Portland, Ore.—The following bids for improvement bonds have been received by the commissioner of finance: Morris Bros., Inc., accrued interest and $102.80 for $25,775.50; The Citizens Bank, par, accrued interest and a premium of 3 per cent. for $25,000; Security Savings & Trust Co., par, accrued interest and premium of 2.80 per cent. for $25,770.60; Wm. Adams, city treasurer, account water fund, sinking fund, par and accrued interest for $25,775.50. The commissioner recommended acceptance of the following bids: The Citizens Bank, par, accrued interest and a premium of 3 per cent., for $25,000; Wm. Adams, city treasurer, account water bond sinking fund, par and accrued interest for $25,775.50.

Portland, Ore.—Impvt. bonds, No. 17498 to 18022 inclusive, dated April 1, 1912, are called for redemption Oct. 1, 1918. Face value with accrued interest will be paid upon presentation at office of city treasurer. After Oct. 1 interest on bonds will cease. Wm. Adams, city treasurer.

Fort Sam Houston, Tex.—Will make additions to its base hospital as well as improvements. Cost, $237.20.

Norfolk, Va.—Bureau yards and docks, navy dept., Washington, D. C., plans to construct at about $110,000 galvanizing and oxyacetylene generating plant. Spec. 3383.

Seattle, Wash.—The voters of Seattle have voted as in favor of the following bond issues: Proposition 1—Enlargement of comprehensive scheme at Smith Cove. Proposition 2—For $1,990,000 of bonds to construct the second unit of the Smith Cove terminal. Proposition 3—For $1,250,000 of bonds to acquire land and sites for expanding this terminal. This bond issue is contingent upon the legislature increasing the port district bond issue above the existing 3 per cent. Proposition 4—For $1,250,000, to purchase docks and warehouses planned by the government on Harbor Island. This issue is contingent upon the government building these wharves and warehouses and upon the legislature increasing the debt limit above 3 per cent. Purchase of the properties will be consummated in five years.

Seattle, Wash.—To perfect plans for the immediate construction of shipping terminals, to cost approximately $3,500,000, Frank Waterhouse will leave for the East next week. A great terminal system will be established on the west waterway holdings of Frank Waterhouse & Co., consisting of 18 acres. Two million dollars will be expended on the construction of a wharf 900 feet long and 150 feet wide, equipped with modern freight-handling appliances and apparatus for oiling and coaling ships from the wharf while loading, also two concrete warehouses each 900 feet long by 150 feet wide.

Spokane, Wash.—Officers of the Union Trust Co. have completed negotiations for the purchase of $75,000 of municipal improvement bonds of Butte, Mont. Bonds will bear 6% interest.

Spokane, Wash.—Officers of the Union Trust Co. have completed negotiations for the purchase of $75,000 of municipal improvement bonds of Butte, Mont. Bonds will bear 6 per cent. interest.

Spokane, Wash.—Following bonds, with interest, will be paid by city treasurer (interest on them will cease Oct. 1, 1918):

Tacoma, Wash.—City will double-tracks lines to shipyards; cost, $237,000.

Ashland, Wis.—W. C. Morris, city clerk, will receive bids, Oct. 3, for improvement bonds; $20,000; 5½ per cent.; 10 yrs.

Appleton, Wis.—If capital issues committee at Washington approves, county will give out bonds for $134,000.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Washington, D. C.—The department of labor autnorizes the following: The bureau of industrial housing and transportation announce the following awards: Hammond, Ind., *Wells Bros. Construction Co., for the erection of 119 houses; Bath, Me., *Leighton Mitchel Co., for the erection of 78 houses; Philadelphia, *Roydhouse-Arey Co., for 710 houses; Seven Pines, Va., *Owens-Ames-Kimball Co., for 129 houses.

Washington, D. C.—The department of labor authorizes the following: *Yoho & Hooker, Akron, Ohio, for building 75 houses at Niles, Ohio. Project No. 481, on lump sum basis.

Boston, Mass.—*Carroll Electric Co., 714 12th St., N. W., Washington, D. C., at $21,892, for town fire protection system. Bureau yards and docks, navy dept., Washington, D. C.

Dubuque, Ia.—Dubuque county supervisors received bids for the purchase of funding bonds in the sum of $301,567.92, for the purpose of retiring warrants drawn on the following funds: General county fund, in the sum of $136,263.53; bridge fund, $87,998.19; road fund, $77,306.20. According to the provisions of the call for bids the bonds will be dated Sept. 1 and bear interest payable semi-annually, on Sept. 1 and March 1, at the rate of 5 per cent. Time of maturity for the bonds is $20,000 in 1922 and a like sum on each following until 1936, when the final issue in the sum of $21,567.92 will mature.

Quincy, Mass.—*Bureau of industrial housing and transportation awarded contract for construction of 256 houses for 422 families to the Casper Ranger Construction Co., of Holyoke, Mass.

Lapeer, Mich.—Belle River drain, from Rd. bridge to Pickerel Road bridge, awarded to *Hugh Woolman, Sandusky, Mich., $58.128. It will be 7 mi. long, 50 ft. wide.

New York, N. Y.—*Sherman-Stalter Co., Center Bldg., Lyons, for dredging in Port Henry harbor, $68,832. U. S. engrg. office, Whitehall Bldg.

New York, N. Y.—N. W. Ryan, 15 Broad St., low bidders for 20 ducts by trench excavation in Whitlock and Westchester Aves., at $54,000. Max Michaelson, 30 W. 118th St., highest bidder, at $129,000. There were ten bidders. Public service commission.

Philadelphia, Pa.—*Turner Concrete Steel Co., 1713 Samson St., for battery storage building, $129,750, 90 days. Bureau yards and docks, navy dept., Washington, D. C.

Philadelphia, Pa.—*The Turner Concrete Steel Co., Philadelphia, will erect the new submarine battery building at the Philadelphia Navy Yard for the Federal government. Cost, $129,750.

Newport, R. I.—*C. B. Maguire, Turks Head Bldg., Providence naval training camp, $3,600,929, 70-125 days. Bureau yards and docks, navy dept., Washington, D. C.

OFFICIAL ADVERTISING

Bids received until October 2, 1918.

Highway Improvements

STATE OF NEW JERSEY
STATE HIGHWAY COMMISSION
TRENTON

Notice is hereby given that sealed bids will be received by the State Highway Commission of New Jersey for the improvement of the following:

STATE HIGHWAY ROUTE NO. 5, SECTION 1A—Bituminous Concrete Surface (Warrenite); estimated, 48,880 square yards. Morris County.

STATE HIGHWAY ROUTE NO. 14, CAPE MAY-RIO GRANDE SECTION—Concrete Surface; estimated, 48,580 square yards. Cape May County.

Bids will be opened and read in public at the office of the State Highway Commission, Broad Street Bank Building, Trenton, N. J., on Wednesday, October 2, 1918, at 10:30 A. M.

Drawings, specifications and forms of bid, contract and bond for the proposed work are on file in the office of the said Department, at Trenton, N. J., and in the offices of Roy Mullins, Division Engineer, 503 Market Street, Camden, N. J., and E. M. Vail, Division Engineer, 790 Broad Street, Newark, N. J., and may be inspected by, or furnished on, deposit of ten dollars ($10) to prospective bidders. Bids must be made on the standard proposal forms in the manner designated therein and as required by the specifications, same to be enclosed in sealed envelopes bearing the name and address of bidder and name of the road on the outside, addressed to State Highway Commission, Broad Street Bank Building, Trenton, N. J., and must be accompanied by a certified check for not less than ten per cent. (10%) of the amount of the bid, and be delivered at the above place on or before the hour named. Copies of standard proposal form will be furnished on application.

Each bidder must accompany his bid with a certificate from a surety company, duly authorized to do business in this State, stating that such surety company will provide said bidder with a bond in such sum as is required in, and in accordance with, the provisions of said specifications, conditioned for the faithful performance of the provisions of the contract and specifications.

By order of the State Highway Commission.

A. LEE GROVER, Chief Clerk.

Bids received until October 28, 1918.

Sewer Planning

BEAVER FALLS, PA.

Sealed proposals will be received by the Town Council of Beaver Falls, Pa., up to Monday evening, October 28, 1918, at 7:00 o'clock, for the designing, engineering and other services in connection with the extension of the present outfall sewer at the sewage disposal plant at the foot of First Street in said Borough, said sewer to be extended will be about 24 inches in diameter and about one mile in length, following the western bank of the Beaver River (which is slack water) until it reaches the New Brighton Dam, emptying below the dam at a point to be determined hereafter. No engineers except those experienced in this character of sanitary and construction work are expected to bid on these plans.

For further particulars apply to the Sewer Committee, or to the City Engineer, Harry T. Barker.

The Town Council reserves the right to refuse any or all bids.

Address all bids (sealed) to Charles Ruhe, Secretary of Town Council, City Building.

CHARLES RUHE, Secretary.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
			STREETS AND ROADS	
La.,	Shreveport	10 a.m., Oct. 1.	Constructing 9.11 mi. improved earth road, involving 55,000 cu. yds. earth excavation, including clearing and grubbing, 35 cu. yds. reinforced concrete culvert, 180 ft. 24-in. concrete pipe and 80 ft. reinforced concrete bridges	W. F. Cooper, Parish Engr.
O.,	Toledo	Oct. 1.	Constructing about 20,000 sq. ft. sidewalk on four streets and about 12,000 sq. ft. on two others	Dir. of Pub. Serv.
N. Y.,	New York	2 p.m., Oct. 1.	Widening, regulating and repaving with sheet asphalt on concrete foundation	Frank L. Dowling, Boro. Pres., Manhattan.
Wash.,	Colfax	10 a.m., Oct. 7.	Road construction	M. W. Fitzsimmons, Co. Engr.
			SEWERAGE.	
Mass.,	Boston	noon, Oct. 2.	Construction sewerage works	Thos. F. Sullivan, Commr. of Pub. Works.
O.,	Columbus	noon, Oct. 8.	Constructing sewers in several alleys	Geo. A. Borden, Dir. of Pub. Serv.
			BRIDGES.	
Ind.,	Greencastle	2 p.m., Oct. 7.	Constructing or repairing two bridges	J. M. Allen, Co. Aud.
Mo.,	Jefferson City	1 p.m., Oct. 9.	Constructing reinforced concrete bridge, consisting of one 90-ft. steel deck-girder vertical lift span, flanked on each side by three 92-ft. reinforced concrete arch spans and 78 ft. of concrete girder structure; vertical lift to be of Waddell type and towers of reinforced concrete; span operated by hand power; four contracts covering structural metal, machinery, wire ropes and construction	E. F. Harding, Co. Hwy. Engr.
Cal.,	Los Angeles	Oct. 15.	Constructing bridge and dam on Gila River	H. V. Clotts, Sup. Engr., Irrigation Dept., Indian Bureau, Federal Bldg., Los Angeles.

STREETS AND ROADS.

Sacramento, Cal.—The county highway commission has made application to the authorities in Washington for permits to get the necessary material to carry on the road construction in this county. This application is made in advance of the new ruling going into effect the latter part of the present month, which makes it necessary to secure permits for material.

Santa Ana, Cal.—Orange county board of supervisors receiving bids soon for 5.47 mi. of road in the Yorba Linda subdivision.

Davenport, Ia.—Main St. will be extended and opened from its present terminus at 30th St. to Duck creek.

Kalamazoo, Mich.—A paved highway crossing the state has been suggested by William M. Bryant, field secretary of the Michigan Good Roads Association, as a memorial to the Michigan heroes who fell in the world war. A statewide meeting to consider the proposal will be called here very shortly.

Dodge Center, Minn.—All bids rejected for graveling and culverts for

jobs 1801 and 1802, state road No. 1. Geo. L. Taylor, county auditor.

Lincoln, Neb.—Paving district bonds, $95,190, has been sold by the city to the Central National Bank of Lincoln. Theo. H. Berg, city clerk.

Bound Brook, N. J.—Boro. council rejected bids for concrete pavement in Lincoln boulevard, 3,540 sq. yds. surface treatment, 4,720 sq. yds. foundation. F. A. Dunham, borough engineer, 109 Park Ave., Plainfield, N. J.

Carlstadt, N. J.—The Wood Ridge and Carlstadt borough councils will widen and extend Passaic Ave., from Hackensack St. to the Short Cut Railroad.

East Orange, N. J.—For road extension in S. Arlington Ave., from Central to Elmwood Ave., bids soon ready; concrete and macadam dressing; $10,000 to $12,000. W. D. Willigerod, chief engineer, City Hall.

Newark, N. J.—Board of commissioners adopted resolution of intention for grading of Delancey St., from Ave. I to Ave. R. Thomas L. Raymond, director, department of streets and public improvements.

Trenton, N. J.—City council receiving bids for curbs and gutters in 6th Ward Park, 1,500 ft. concrete. A. Swan, engineer, City Hall.

Brooklyn, N. Y.—The board of estimate, at the request of the navy department, authorized the grading, curbing, flagging and paving with granite blocks of 41st St., between First and Second Aves.

East Liverpool, O.—City contemplates paving, grading and sewers, $250,000. J. P. Kelly, engineer, City Hall.

Kenton, O.—Bids offered by Hardin county, Aug. 26, for highway No. 226 bonds to the amount $47,075, were purchased by the Ohio Industrial Commission. J. W. Tilley, county auditor.

Van Wert, O.—Plans being prepared for improving 10 mi. of road in Van Wert county. Address Thos. J. Priddy, county engineer.

Newkirk, Okla.—About $95,000 available for constructing and maintaining highways in Kay Co.

Longview, Tex.—Gregg county has sold to Halsey, Stuart & Co., of Chicago, $50,000 road bonds. E. M. Bromlette, county judge.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Burlington, Ia.—*Geo. Peterson, 1113 S. 10th St., for paving with cement concrete, 7-in.

Clinton, Ia.—*Robt. Witte, Wheatland, for grading and graveling Clinton-Comanche road, Calamus-Buena Vista road, 3,700 cu. yds. excavation, 189 cu. yds. borrow, 3,936 cu. yds. excavation, $3,809. Grading Elvina-Dewitt road, *J. W. Smith, Clinton, Ia. Fred Lohberg, county auditor.

Boston, Mass.—*B. E. Grant, for granite block pavement on Atlantic Ave., from Summer St. to Broad St., city proper; $103,868.15. Board public works.

Boston, Mass.—*James Doherty, for granite block pavement in Tremont St., from Common St. to Castle St. Board public works.

Boston, Mass.—*Rowe Contracting Co., for Topeka pavement in Tremont St., from Castle St. to Dover St., city proper. Board public works.

Boston, Mass.—*William J. Barry, for recut granite block and wood block pavement in Dorchester Ave., from Rawson St. to Savin Hill Ave.; $88,982. Board of public works.

St. Peter, Minn.—*John Keogh, St. Peter, for grading and graveling portion of Grace St. hill and Fort road, $619. M. E. Stone, city clerk.

Grand Island, Neb.—Watts county, Concordia, Kan., for paving district No. 24, 9,000 yds. asphalt or brick paving. H. E. Clifford, clerk. Engineer, H. W. Kibbey.

Falls City, Neb.—*Chas. Heineman, for sidewalks on various streets.

Ardmore, Okla.—*O. C. Sampley, for paving 4 mi. of road, by county commissioner of Carter county.

Harrisburg, Pa.—*Thos. L. Ryan, Binghamton, N. Y., Sept. 25, for road construction in Westmoreland county, Ligonier borough, route 119, 5,091 ft., plain concrete. State highway department.

Harrisburg, Pa.—Union Paving Co., Philadelphia, Pa., spec. A., $13,520, bidder for road construction in Delaware county, Yeadon borough, route 130, 1,115 ft. in length, vitrified block or bituminous concrete, Sept. 25. State highway department.

SEWERAGE.

Macon, Ga.—The Citizens & Southern Bank of Macon was the successful bidder for the sewer bonds to the amount $55,000. David S. Jones, city clerk.

Independence, Kan.—Board of commissioners has approved an ordinance for the issuance $1,862.79 bonds for the construction of a lateral sewer. R. R. Bittmann, mayor.

Boston, Mass.—The commissioner of public works states that it his intention to construct eleven catch-basins and connections, including about 75 lin. ft. of 10-in. surface drain, at Plymouth St., in Freeport St., between Union St. and a point about 160 ft. southeast of Victory road, in the Dorchester district, at an estimated cost of $3,000. To construct the following sewerage works in Rutherford Ave., between Chapman and Cambridge Sts.: At Chapman St., about 25 lin. ft. of 2-ft. 6-in. concrete sewer; about 125 ft. southeast of Dunstable St., about 49 lin. ft. of 24-in. pipe sewer; at Dunstable St., about 126 lin. ft. of 20-in. pipe sewer; at South Eden St., about 35 lin. ft. of 20-in. pipe sewer; 6-ft. 6-in. concrete circular sewer, from 25 ft. southeast of Dunstable St. to Tibbets Town way; 4-ft. concrete sewer, from Middlesex St. to Baldwin St.; 3-ft. 6-in. concrete sewer, from Allen St. to Thorndike St., 3-ft. concrete sewer, from Thorndike St. to Mishawum St.; 2-ft. 6-in. concrete sewer, from Mishawum St. about 157 ft. northwest; 24-in. earthen pipe sewer, from 157 ft. northwest of Mishawum St. to Cambridge St., in the Charlestown district, at an estimated cost of $60,376. The existing sewers to be abandoned and discontinued.

What We Are Fighting For

President Wilson's statement of the "terms upon which the United States would consider peace."
From his address to Congress, January 8, 1918.

I. Open covenants of peace, openly arrived at, after which there shall be no private international understandings of any kind, but diplomacy shall proceed always frankly and in the public view.

II. Absolute freedom of navigation upon the seas outside territorial waters, alike in peace and in war, except as the seas may be closed in whole or in part by international action for the enforcement of international covenants.

III. The removal, so far as possible, of all economic barriers and the establishment of an equality of trade conditions among all the nations consenting to the peace and associating themselves for its maintenance.

IV. Adequate guarantees given and taken that national armaments will be reduced to the lowest point consistent with domestic safety.

V. Free, open-minded and absolutely impartial adjustment of all colonial claims, based upon a strict observance of the principle that in determining such questions of sovereignty the interest of the population concerned must have equal weight with the equitable claims of the Government whose title is to be determined.

VI. The evacuation of all Russian territory, and such settlement of all questions affecting Russia as will secure the best and freest co-operation of the other nations of the world in obtaining for her an unhampered and unembarrassed opportunity for the independent determination of her own political development and national policy, and assure her of a sincere welcome into the society of free nations under institutions of her own choosing; and more than a welcome, assistance also of every kind that she may need and may herself desire. The treatment accorded Russia by her sister nations will be the acid test of their good-will, of their comprehension of her needs as distinguished from their own interests, and of their intelligent and unselfish sympathy.

VII. Belgium, the whole world will agree, must be evacuated and restored without any attempt to limit the sovereignty which she enjoys in common with all other free nations. No other single act will serve as this will serve to restore confidence among the nations in the laws which they themselves set and determined for the government of their relations with one another. Without this healing act the whole structure and validity of international law is forever impaired.

VIII. All French territory should be freed and the invaded portions restored, and the wrong done to France by Prussia in 1871 in the matter of Alsace-Lorraine, which has unsettled the peace of the world for nearly fifty years, should be righted in order that peace may once more be made secure in the interest of all.

IX. A readjustment of the frontiers of Italy should be effected along clearly recognizable lines of nationality.

X. The peoples of Austria-Hungary, whose place among the nations we wish to see safeguarded and assured, should be accorded the freest opportunity of autonomous development.

XI. Roumania, Serbia and Montenegro should be evacuated, occupied territories restored, Serbia accorded free and secure access to the sea, and the relations of the several Balkan states to one another determined by friendly counsel along historically established lines of allegiance and nationality; and international guarantees of the political and economic independence and territorial integrity of the several Balkan states should be entered into.

XII. The Turkish portions of the present Ottoman Empire should be assured a secure sovereignty, but the other nationalities which are now under Turkish rule should be assured an undoubted security of life and an absolutely unmolested opportunity of autonomous development; and the Dardanelles should be permanently opened as a free passage to the ships and commerce of all nations under international guarantees.

XIII. An independent Polish state should be erected which should include the territories inhabited by indisputably Polish populations, which should be assured a free and secure access to the sea, and whose political and economic independence and territorial integrity should be guaranteed by international covenant.

XIV. A general association of nations must be formed under specific covenants for the purpose of affording mutual guarantees of political independence and territorial integrity to great and small states alike.

These fourteen propositions were subsequently reduced by the President to four general principles which were submitted to Congress on February 11, 1918.

From the President's address to Congress February 11th, 1918

FIRST.—That each part of the final settlement must be based upon the essential justice of that particular case and upon such adjustments as are most likely to bring a peace that will be permanent.

SECOND.—That peoples and provinces are not to be bartered about from sovereignty to sovereignty as if they were mere chattels and pawns in a game, now forever discredited, of the balance of power; but that,

THIRD.—Every territorial settlement involved in this war must be made in the interest and for the benefit of the populations concerned, and not as part of any mere adjustment or compromise of claims among rival states; and,

FOURTH.—That all well-defined national aspirations shall be accorded the utmost satisfaction that can be accorded them without introducing new or perpetuating old elements of discord and antagonism that would be likely in time to break the peace of Europe and consequently of the world.

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BUYERS' CLASSIFIED DIRECTORY

of Names and Addresses of Firms from Whom to Buy Materials, Appliances and Machinery Needed by Municipal Departments and Contractors

Building Stone

*Badger Crushed Granite Co., 133 W. Washington St., Chicago, Ill.

Cement

*Alpha-Portland Cement Co., Easton, Pa.
Atlas Portland Cement Co., 30 Broad St., N. Y.
*Lehigh Portland Cement Co., Allentown, Pa.

Contractors' Equipment

(See Paving Machinery also.)

CRANES AND HOISTS.

*Machinery Warehouse & Sales Co., Old Colony Bldg., Chicago, Ill.

DUMPING BUCKETS.

Stuebner, G. L., Iron Works, Hancock St., Long Island City.

MOTOR TRUCKS, DUMPING.

*Dart Motor Truck Co., Waterloo, Iowa.
*Duplex Truck Co., Lansing, Mich.
*Kissel Motor Car Co., 570 Kissel Ave., Hartford, Wis.

PUMPS, DIAPHRAGM.

*Parker, A. A., Waterford, N. Y.

ENAMELED HOUSE NUMBERS.

*The Enamel Products Co., Cleveland, Ohio.
*Mathews Interlocking Sign Co., White Plains, N. Y.

DANGER SIGNALS.

*A. G. A. Railway Light & Signal Co., Elizabeth, N. J.
*The Automatic Signal & Sign Co., Canton, O.

Fire Dept. Equipment

COMBINATION CHEMICAL AND HOSE WAGONS.

*American-La France F. E. Co., Elmira, N. Y.
*Kissel Motor Car Co., 570 Kissel Ave., Hartford, Wis.

FIRE ALARM SYSTEMS.

*Loper Fire Alarm Co., Stonington, Conn.

FIRE ALARM TELEGRAPH.

*Gamewell Fire Alarm Telegraph Co., Grand Central Terminal, N. Y.

FIRE HOSE.

*Fabric Fire Hose Co., Duane & Church Sts., New York.
*B. F. Goodrich Rubber Co., Akron, Ohio.

FIRE PROTECTORS.

*Non Explosive Can & Tube Co., Chicago, Ill.

PUMPING ENGINES, GASOLENE.

*American-La France F. E. Co., Elmira, N. Y.

TRACTORS.

*Couple Gear Freight-Wheel Co., 485 Buchanan Ave., Grand Rapids, Mich.

TRIPLE COMBINATION MOTOR.

*American-La France F. E. Co., Elmira, N. Y.

Paving Machinery

ASPHALT PLANTS.

*Cummer & Son Co., Cleveland, O.
*East Iron & Machine Co., Lima, Ohio.
*Warren Bros. Co., Boston, Mass.

CONCRETE MIXERS.

*The Jaeger Machine Co., 400 Dublin Ave., Columbus, Ohio.
*Koehring Machine Co., Milwaukee, Wis.
*Northwestern Steel & Iron Works, Eau Claire, Wis.
*Ransome Concrete Machinery Co., 1754 2d St., Dunellen, N. J.

OIL DISTRIBUTORS.

*Austin Western Road Mach. Co., Chicago, Ill.

ROAD GRADERS.

*Austin-Western Road Mach. Co., Chicago, Ill.
*Koehring Machine Co., Milwaukee, Wis.
*F. B. Zieg Mfg. Co., Fredericktown, Ohio.

ROAD ROLLERS.

*Austin-Western Road Mach. Co., Chicago, Ill.

SCRAPERS.

*Austin-Western Road Mach. Co., Chicago, Ill.

TAR KETTLES, ASPHALT HEATERS, ETC.

*Littleford Bros., Cincinnati, O.
*Warren Bros. Co., 142 Berkeley St., Boston.

Paving Materials

ASPHALT.

*Bitoslag Paving Co., 90 West St., New York.
*Standard Oil Co., 26 Bway., New York, N. Y.
*Standard Oil Co., 72 W. Adams St., Chicago.
*U. S. Asphalt Refining Co., 90 West St., N. Y.

BINDERS.

*Barrett Co., The, 17 Battery Pl., New York.
*Standard Oil Co., 26 Broadway, New York.
*U. S. Asphalt Refining Co., 90 West St., N. Y.

BITUMINOUS PAVEMENTS.

*Badger Crushed Granite Co., 133 W. Washington St., Chicago, Ill.
*Barrett Co., The, 17 Battery Pl., New York.
*Warren Bros. Co., 142 Berkeley St., Boston.

BRICK.

*The Barr Clay Co., Streator, Ill.
*Terre Haute Vitrified Brick Co., Terre Haute, Ind.
*Thornton Fire Brick Co., 909 Goff Bldg., Clarksburg, W. Va.

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*Standard Oil Co., 72 West Adam St., Chicago, Ill.
*U. S. Asphalt Refining Co., 90 West St., N. Y.

PAVING BLOCK.

*Badger Crushed Granite Co., 133 W. Washington St., Chicago, Ill.

POWDER.

*Du Pont, de Nemours & Co., Wilmington, Del.

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*Wyckoff Pipe and Creosoting Co., 30 E. 42d St., New York.

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*Warren Foundry & Machine Co., 11 Broadway, New York.

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*Champion Potato Machine Co., Hammond, Ind.
*W. H. Stewart, 131 George St., Boston, Mass.

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*Pacific Flush Tank Co., Chicago & New York.
*Standard Paint Co., New York City.

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*Pacific Flush Tank Co., Chicago & New York.
*Shone Co., Yoemans Bros. Co., Gen. Sales Agents, 227 Institute Pl., Chicago, Ill.

NOZZLES.

*Pacific Flush Tank Co., Chicago & New York.

PLANTS.

*The Sanitation Corporation, 50 Church St., New York, N. Y.

SEWAGE—SCREENS.

*The Sanitation Corporation, 50 Church St., New York, N. Y.

RODS.

*The F. Bissell Co., Toledo, O.
*W. H. Stewart, 131 George St., Boston, Mass.

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*Pacific Flush Tank Co., Chicago & New York.

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*Wm. E. Dee Co., 30 N. La Salle St., Chicago, Ill.
*Odorless Sewer Basin Co., Youngstown, Ohio.

INCINERATORS.

*Stacy-Bates Co., McKnight Building, Minneapolis, Minn.

MOTOR SWEEPERS.

*Elgin Sales Corporation, New York-Chicago.

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*Austin Western Road Mach. Co., Chicago, Ill.

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*Austin Western Road Mach. Co., Chicago, Ill.
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*The Automatic Signal & Sign Co., Canton, O.
*The Enamel Products Co., Cleveland, O.
*Mathews Interlocking Sign Co., White Plains, N. Y.

TRAFFIC SIGNS.

*Mathews Interlocking Sign Co., White Plains, N. Y.
*The Enamel Products Co., Cleveland, Ohio.

Water Works

AIR COMPRESSORS.

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*Sullivan Mchy. Co., 122 S. Michigan Ave., Chicago, Ill.

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*Sullivan Mchy. Co., 122 S. Michigan Ave., Chicago, Ill.

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*Cook, A. D., Lawrenceburg, Ind.
*Layne & Bowler Co., 1117 Exchange Bldg., Memphis, Tenn.

FILTERS.

*N. Y. Continental Jewell Filtration Co., Nutley, New Jersey.
*Pittsburgh Filter Co., Pittsburgh, Pa.
*Roberts Filter Co., Darby, Pa.

FILTRATION PLANTS.

*Pittsburgh Filter Co., Pittsburgh, Pa.
*Roberts Filter Co., Darby, Pa.

FLAP VALVES.

*Coldwell-Wilcox Co., Newburgh, N. Y.

METERS.

*Hersey Mfg. Co., South Boston, Mass.
*Pittsburgh Meter Co., East Pittsburgh, Pa.
*Thomson Meter Co., 110 Bridge St., Bklyn.
Union Water Meter Co., 33 Hermon St., Worcester, Mass.

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*Pittsburgh Meter Co., East Pittsburgh, Pa.

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*Amer. Cast Iron Pipe Co., First National Bank Bldg., Chicago, Ill.
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*Lynchburg Foundry Co., Lynchburg, Va.
*Massillon Iron & Steel Co., Massillon, O.
*Standard Cast Iron Pipe & Foundry Co., Bristol, Pa.
*U. S. Cast Iron Pipe & Foundry Co., Burlington, N. J.
*Warren Foundry & Machine Co., 11 Broadway, New York, N. Y.
*Walter A. Zelnicker Supply Co., St. Louis, Mo.

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*East Jersey Pipe Corporation, Fulton and Church Sts., New York, N. Y.

PIPE, WOOD.

*Wyckoff Pipe & Creosoting Co., 30 E. 42d St., N. Y.

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*Dayton, Dick, Co., Quincy, Ill.
*Luitwieler Pumping Engine Co., Rochester, N. Y.
*Shone Co., Yoemans Bros. Co., Gen. Sales Agents, 229 Institute Place, Chicago, Ill.

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*Cook, A. D., Lawrenceburg, Ind.
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SHEAR VALVES.

*Coldwell-Wilcox Co., Newburgh, N. Y.

SLEEVES AND VALVES.

*Smith, A. P., Mfg. Co., East Orange, N. J.

SLUICE GATES.

*Coldwell-Wilcox Co., Newburgh, N. Y.

STRAINERS.

*Cook, A. D., Lawrenceburg, Ind.

TAPPING MACHINES.

*Smith, A. P., Mfg. Co., East Orange, N. J.

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*Flower-Stephens Mfg. Co., 105 Parkinson St. Detroit, Mich.
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WASTE DETECTION.

*The Pitometer Co., 27 Elm Street, N. Y. C.

WATER MAIN CLEANING.

National Water Main Cleaning Co., 50 Church St., N. Y.

WATER SOFTENING AND PURIFYING.

*N. Y. Continental Jewell Filtration Co., 15 Broad St., N. Y.

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*Electric Ozone Sterilizer Co., 726 Monadnock Block, Chicago, Ill.
*Electro Bleaching Gas Co., 19 East 41st St., New York.

WATER STERILIZING APPARATUS.

*Wallace & Tiernan Co., 132 Centre St., New York City.

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